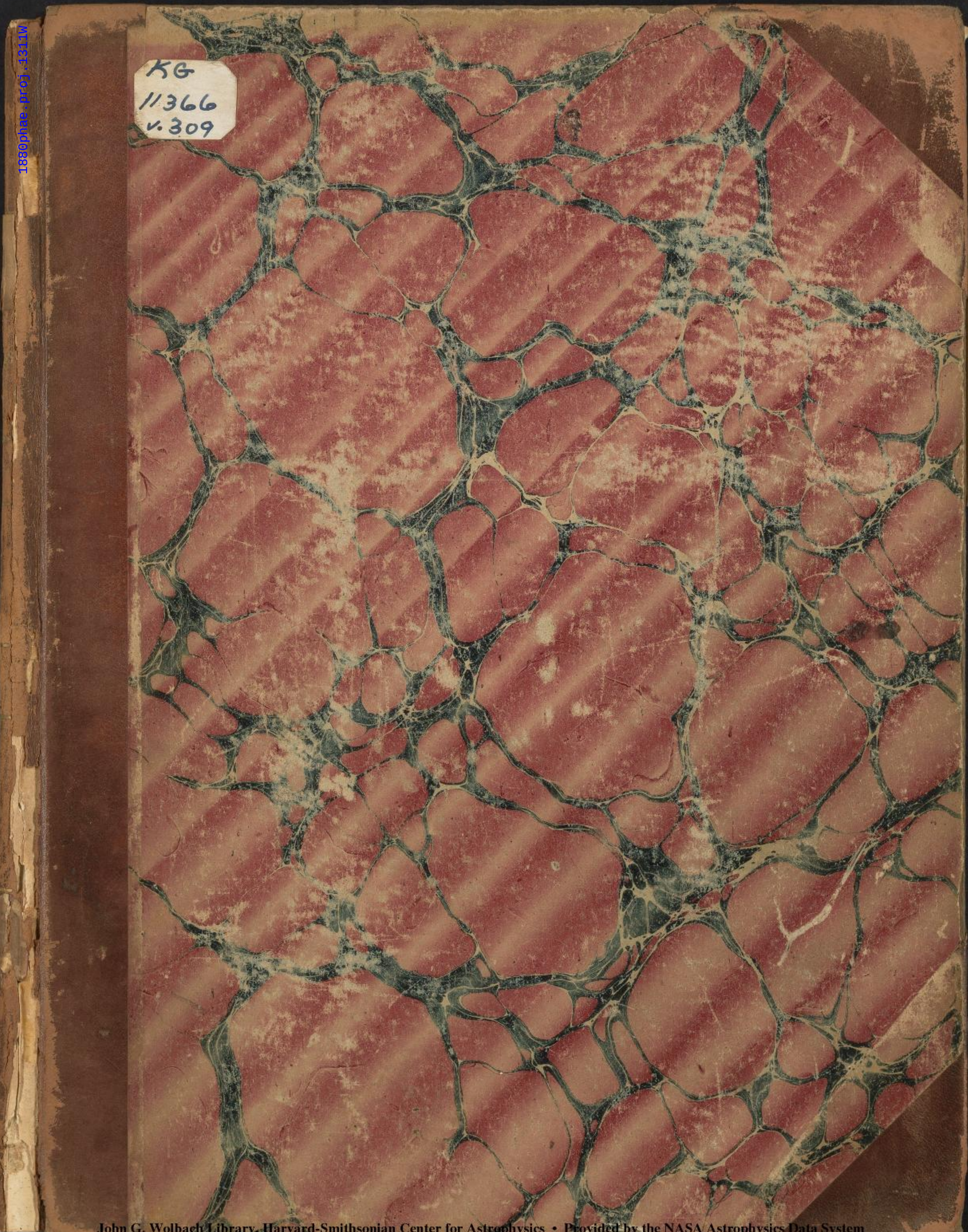


KG
11366
v.309

250th Anniversary of Cambridge.

Dec. 28, 1880.

Looked at stars in Birmingham's list nos. 534 539 & 544. Pick
Spectrum resemble Cat 17681. Adjacent stars also seem to have similar spectra. Haze prevents determination with certainty.

Swift's Comet. H. ob

R. A.
5h 39m 33s
1 47
~~7~~
7
- 3 53
2 0
- 3 39

2 28
5 39
3 11

Dec.
+ 32°.7

- 5 39
2 21
- 3 18

5 39
2 32
3 7

4/24
6
4/5.12
1.03
5/12.24

Pos. 0 137.3
45.0
~~192.3~~

Set at 182.3 for transits

Order - Star, Star, Comet, Comet - Star in southern & Comet in northern half of square. H. ob. Seven ~~Six~~ complete sets - first & second sets not considered quite as good as others - in fifth set used last tap on last transit of Comet. [The two taps being separated by a very short interval.]

Dec. 28, 1880.

App. setting on Comet

$t = 3^h\ 10^m\ 28^s$

Coarse Hour = 9^h 29.5^m
" Decl = 32.2°
~~Fine " =~~
~~" Hour =~~

Comp. star a.

$3^h\ 13^m\ 50^s$
Coarse Hour = 9^h 34.5
" Decl = + 32.05
Fine " = + 3.8 div.
" Hour = $21^h\ 24^m$ + 2.6 div.

Mag of Comp. 8.5 - + \ b follows a 23^s + is 9.25' north of it. Mag. of b 8.8 + - \ c fol b 25^s + is .25' north of it. Mag of c 9.5 + - \ d prec. a 1^m + 27^s + is 1.25' south of it. Mag. of d 9 + - \ e fol d 9.5^s + is 2.5' north of it. Mag of e 9 + -

Setting on α ~~Cygni~~ Aurigae for circle corrections

$t = 3^h\ 24^m\ 36^s$
Coarse Hour = $10^h\ 15^m$
" Decl = 45.8°
Fine Decl = + 1.6 div
" Hour = $22^h\ 16^m$ + 0.1 div

Dec. 28 1880

α Orionis

~~Limit of red~~ Spectrum   Pickering obs.

Limit of red $2\overset{5}{2},0$ ~~36.3~~
~~Red~~ Yellow 28,0   5~~6.2~~
Green & blue 36,3
End of blue 56,2

Looked at Birm 148 with two direct vision prisms but lines were not well defined.

Dec. 30, 1880.

Region of Birmingham's stars. (stars with bright lines found by Wolf & Rayet)
{No. 534, 539, 544. P. obs.
{DM. +35° 4001, +35° 4013, +36° 3956.

6 5 Star 4th type nr. same $\overset{\text{R.A.}}{\alpha}$ as one of Birmingham's, 15' s. H.C. 9
The Birmingham star is No. 534.
In this case the star 15' s is probably DM. +35° 4002
See further observations Sept. 29, 1886, book 42, page 126.

6 7 Another object with singular spectrum 6' s of the star Birm. 534, about 40s f. H.C. 10

6 20 β Urs. Min. 1 α Urs. Min, S. [illegible].
α Urs. Min. 3 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

Birmingham 534 = DM +35 4001

Transits for Δα P. obs.

				m	s	
a	12m	22s,0	a	13	13,2	H.C. 9
b		38.0	b		29.2	
c		55.6	c		47.3	B 534??

c is probably DM. +35° 4006, not B 534, which is DM. +35° 4001.
a is probably DM. +35° 4002.

b 0½' n of a; c same δ as a
c = DM. +35° 3996 a is very red, spectrum 4th type.
c is probably DM. +35° 4006.

Birm. 534 15m 58s.8
Star 5' s 16 48.0 Red, spectrum 4th type. H.C. 10
Not identified in DM.
See further observations Sept. 29, 1886, book 42, page 126.
DM. +35° 3993 not seen.

Dec. 30 1880

A third red star f a about 5s, 5' s of it; nearly same color, spectrum not peculiar. H.C. II

This third star may be DM. + 35° 4003 if a is 4002. See further observations Sept. 29, 1886, book 42, page 126.

5 43 + 31.6
3 0 Comet H. obs.
-2
-
7

Dec. 28, 1880 #2
to Feb 11, 1881

transits.

Com prec a 1m 10s +
is 7' Comp. star
8.6 prec. b 1.7s +
is 0.7 c 9.1
fol. th of it- Mag
of d 4s + is 7.5' north
of it-
star.

Coars m
" Dec = + 31.3°
Fine " = + 0.8 div
" Hour = 22h 40m + 0.0 div.
App. setting on Comet
t = 4h 28m 19s
Coarse Hour = 10h 44m
" Dec = 31.3°

Dec. 30 1880

A third red star f a about 5^s, 5′ s of it; nearly same color, spectrum not peculiar. H.C. 11

This third star may be DM. + 35° 4003, if a is 4002. See further observations Sept. 29, 1886, book 42, page 126.

5 43 + 31.6
3 0 Comet H. obs.

−2 43

−2 37

Pos. 0 28.5
45

Set at 73.5 for transits.

Comp. star = a b prec a 1^m 10^s & is 7′ south of it Mag of Comp. star 8.6 Mag of b 8.4 c prec. b 1.7^s & is 0.7′ north of it Mag. of c 9.1 d fol. a 46^s & is 2.5′ north of it Mag of d 9.1 e prec. a 44^s & is 7.5′ north of it Mag. of e 8.5

Setting on comp. star.

$t = 4^h\ 25^m\ 2^s$

Coarse Hour = $10^h\ 38.5^m$

" Decl = + 31.°3

Fine " = + 0.8 div

" Hour = $22^h\ 40^m$ + 0.0 div.

App. setting on Comet

$t = 4^h\ 28^m\ 19^s$

Coarse Hour = $10^h\ 44^m$

" Decl = 31.3°

Dec. 30, 1880.

Order — Comet. Comet. Star. Star.
Both in northern half of square.
α Origie

Time piece A.W. Co. No. 1256220

Quincy Comet seeker was the instrument used.
Low power

(slow)
Sid. Watch is -51^s of 1327 at $15^h\ 45^m$ S.T.

by Watch (Sidereal).

$15^h\ 53^m\ 48^s$. made the edge flattened just before (last contact). it went off and it was sure four seconds after.

Frank Waldo Obs.

Sid Watch slow 51^s at 16^h (S.T.)

h	m	s	
15	53	48	= Observed Time.
		−51	Error of time piece comp. with 1327.
15	54	39	
		+12.5	Err of 1327
15	54	26.5	Camb. Sid. Time of last contact.
18	37	59.4	S.T. Camb. mean. Noon.
21	16	27.1	
	3	29.1	
21	12	58	C. M.T. of last contact.
		15.5	
21^h	13^m	$13^s.5$	Boston M.T. of last Contact.

Partial Solar Eclipse observed Dec 30.8. 1880.
at Harvard Observatory.

Dec. 30, 1880 astronomical
Stopwatch compared with 7, 3451
35 30ˢ by 7, 3451 30.8 stopwatch
31.2
31.2 M.

Dec. 30. 1880.
Partial Solar Eclipse. obs with West Equatorial and full aperture &

	Bond 236.			Bond 394.	
15	30	11.5	8	49	0.0
	31	11.5		50	0.0

15 54 ~~53~~ 7.0 = Preliminary signal while yet the di was notched
27.5 = True time of contact.

	Bond 236.			Bond 394.	
16	3	16.5	9	22	0.0
16	4	16.6	9	23	0.0
16	5	16.7	9	24	0.0

O. C. Wendell obs.
W. V. Brown recorder at time of eclipse.

Reduction.

15 54 27.5
15 30 11.5
24 16.0
-4.0
24 12.0
8 49 0.0
9 1.3 12.0 B. M. T.
15.5
21 12 56.5 C. M. T.

3ˢ.932
.044
3.976

Dec. 30, 1880.

Order. — Comet. Comet. Star. Star.
Both in northern half of square.
2 Oriais

5^{m}
div.
m + 0.6 div
transits.

Time of last contact

1287 M. Tobias

14^{h} 53^{m} $55^{s}.5$ or 56

Instrument used Searle 3-inch Eq.

Comparison

1327	1287
15^{h} 19^{m} 0^{s}	14^{h} 18^{m} 9^{s}
15 20 0	19 9
25 0	24 9
16^{h} 2^{m} 0^{s}	15^{h} 1^{m} 9^{s}

M. L. Irwin obs.

Time piece Sid. ch. Tobias 1287.

Dec. 30 1880

S.F. W. M. N. 18^{h} 38^{m} $3^{s}.33$
3.89
S. J. C. M. N = 18 37 59.44

h m s
16 2 0, 1327
15 1 59 1287
1 0 51 1287 slow of 1327
12.5 corr. for err. of 1327
1 0 38.5 1287 slow of true sid. time
14 53 56.0 obs. time of contact
15 54 34.5 true sid. time of contact
~~18 37 59.44 S. J. C. M. N~~
24 0 0
39 54 34.5
18 37 59.44 S. J. C. M. N
21 16 35.06
~~3 30.00~~ Red. to mean time 3^{m} $29^{s}.14$
~~21 13 05.06~~ Camb. mean time 21^{h} 13^{m} $5^{s}.92$
15.5
~~21 13 20.5~~ Boston mean time 21^{h} 13^{m} $21^{s}.4$

Partial Solar eclipse observed Dec 30.8 1880.

Dec. 30, 1880.

Order — Comet. Comet. Star. Star.
Both in northern half of square.
α Origie
$t = 4^h\ 50^m\ 26^s$
Coarse Hour = $11^h\ 41.5^m$
" Decl = +45.8
Fine " = +7.1 div.
" Hour = $23^h\ 42^m + 0.6$ div
Five complete sets of transits.

Dec. 30, 1880 astronomical
Stopwatch compared with 7. 3451

20 35	30s by 7. 3451	30.8 stopwatch	
		31.2	
		31.2	
		32	Mean 31.1
	60s " "	61.2	
		61.4	
		60.6	
		36	Mean 61.1

R 112. 1s slow at 8 45 (20h 45m) R. 112
E. Equat. P. obs 2d power ring micrometer C. rec-
order S. obs. Stopwatch
Bowditch Comet Seeker. E. obs. projected on screen
W. Equat. O.C.W. obs. B. 236
Quincy Comet Seeker . (Hea 318 slow at 9 03

E. Equat. Last contact.
9h 13m 18s.

13m 21s of Richard. J. R. E. with projected image by Bowditch Comet Seeker.

S. observed through finder of E. Equatorial, with stopwatch rated as above and diaphragm reducing aperture to 2 inches. Shade glasses held in hand.
14m 0s Richard 112 Stop watch 36s.2 S. obs.
Wires in field of finder interfered with observation; time not very accurate.

Dec. 30.^{d}9 Astronomical. 1880

$21^{h}\ 40^{m}$ ± Mean Time.

Richard $0^{s}.2$ fast of Bond 394 (3 comparisons.) J. R. E.

If we assume ~~the~~ rate of R 112 to be uniform, we have

R. 112 at $20^{h}\ 45^{m}$ slow of Boston mean time $1^{s}.0$
" " 21 40 fast " " " " 0.2
Hence " " 21 13 slow " " " " 0.4

Stopwatch gains $1^{s}.1$ in first half minute; see p. 7.
Hence interval between starting & stopping stopwatch $35^{s}.1$; and time of starting stopwatch by R 112 $21^{h}\ 13^{m}\ 24^{s}.9$
Boston mean time 21 13 25.5
Cambridge mean time 21 13 10.0

Observation of J. R. E. R. 112 21 13 21.0
Boston mean time 21 13 21.4
Cambridge " " 21 13 5.9

Errors of Clocks, Dec. 30

Bond 394 (Standard Mean Time)

At; $11^{h}\ 18^{m}$ Error = $-0^{s}.19$
11 24 − 0.19

18 49 − 0.05
20 27 − 0.04
21 28 − 0.04
24 00 − 0.01

Frodsham 1327 (Sidereal)

At; 2^{h} (Sidl.) Error = $+12^{s}.51 \pm .07$
14^{h} " = $+12.50 \pm .06$

The above ± .07 also affects the error of Bond 394:

J. R. Edmands.

Dec 30, 1880

22h. The results of the observations of last contact of the solar eclipse are as follows:— Observations were made with six telescopes and are given below in the order of apertures.

East Equatorial. Aperture reduced to 5 inches. P. obs. Contact observed at $9^h 13^m 18^s$ (A.W.C. rec) on R 112 which was 1.0 slow of B.M.T. Hence $9^h 13^m$ B.M.T. is observed time. 2d power ring micrometer. diam. Sextant shade glass No 7

West Equatorial. Aperture $5\frac{1}{4}$ ins. ~~W~~ O.C.W. obs.

Finder. E Equatorial. Aperture reduced to 2 inches. Power diam. ~~[illegible]~~ S. obs. Stopwatch started at last contact and stopped at 9 14 0 (R 112). It then read 36.2 ∴ B.M.T. $9^h 13^m 24^s$.

Bowditch Comet-Seeker. Aperture 4 ins. Image projected on screen J.R.E. obs. $9^h 13^m 21^s$ (R 112) B.M.T.

Searle Equatorial Aperture 3 ins. Miss [illegible] obs. Sid. ch. Tobias 1287. $14^h 53^m 36^s = 9^h 13^m 20^s$ B.M.T.

Quincy Comet-Seeker Aperture $2\frac{1}{2}$ ins F.W. obs. Sid. Watch $15^h 53^m 48^s = 21^h 13^m 14^s$ B.M.T.

Dec 30. 1880.

Summary of Time of last contact.

Inst.	Ap.		Obs.
E. Equat.	5in.	$9^h\ 13^m\ 18$	P
W. Equat.	5 "	12	O.C.W.
Tinder E. Equat.	2 "	24	S.
Bowditch C. Sikes	4	21	E.
Searle Equat.	3	20	J.
Quincy C. Sikes	$2\frac{1}{2}$	14	F.W.
		109.0	

$9^h\ 13^m\ 18.0$ B.M.T.
$9^h\ 13^m\ 3.0$ C.M.T.

The timepiece R 112 being a fraction of a second slow, (see p. 8) the above Boston mean times may be reduced to Cambridge mean times by subtracting $15.^s$

Dec. 31. 1880.

95
5^h 26 97
94
92
96

5 55 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 4 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

γ. α
^

P. obs.

Sweep for remarkable spectra, beginning with star 6^m pr Birming[ham] 534, δ 35.9, Limits of sweep δ 34°.5 δ 37°.5

1 h 5^h 3^m	t	1^h	2^m	10^s	
2 Bright Stars }	t	1	5	45	δ 35°.5
	t	1	6	10	35°.6
Bright-star	t	1	9	0	36.5
Birm. 534	t	1	9	40	34.8
— " —	t	1	11	40	35.8
Sing. spectr.	t	1	12	15	35.6
Birm.	t	1	14	20	36.3
Sing spectr. Susp.	t	1	16	0	34.4

Dec. 31, 1880

Search for G. C. 101 S. obs.

Transits 1h 43 25

(1)
0
10
24 Reject

(2)
a 45 47
b . 5 6
c 46 13

(3)
a 46 36
b . 45
c 47 2

(4)
d 48 45
b 49 4

---

d 49 15
b 49 39

In the above transits, d is W. 0 530; b is a star about 11' n of d; a and c are nebulae; a is about 1' n of b, c about 1' s of b; a is close to a small star, slightly p the neb; c is nearly due s of a small star. The nebulae are faint and resemble G. C 91 and 98.

The transits are rough, the square not being very accurately set, and the stars d and b not easily set when they could be compared at all. b is apparently DM. +2° 85; d = W. 0 530 = DM. +2° 84; place of b for 1860 0h 32m 16s, +2° 32'.3; hence nebula a for 1860 0h 32m 7s, +2° 33'; c for 1860 0h 32m 33s, +2° 31'; a is probably G. C. 101, and c the last of 3 nebulae seen by Herschel, of which G. C. 101 is the second; it does not occur separately in the G. C.

Note Feb. 8
1881.
D'Arrest
examined
this region
carefully; see
the Observationes
Havnienses,
pp. 8 and 10
for these two
nebulae, and
Astr. Nachr. LXII
279 (No. 1482) as
referred to by
D'Arrest, for
the place of the
star b, which
would be for 1860
0h 32m 16.3
+2° 32' 44"
making neb a
0h 32m 7s
+2° 33'.7
and neb c
0h 32m 33s
+2° 31'.7
in good
agreement
with D'Arrest.

Dec. 31, 1880

~~Cetus No. 18 Not perceptibly red — spectrum not peculiar~~

Cetus 10 Color reddish - Spec. not peculiar

Cetus 13, Color reddish spectrum probably III

Cetus 18 Spec. not peculiar Color reddish

Cetus 12 Color nearly white - Spec. not peculiar

Cetus 22 Color yellowish - Spec III

Cetus 25 Color reddish - Spec. III

Cetus 70 Spec. not peculiar Color white

Cetus 77 Spec not peculiar Color white

Cetus 89 Color yellow - Spec. not peculiar

Cetus 94 Yellowish Spec. not peculiar

Cetus 141 Yellow or white - Spec. not peculiar

7 59 Cetus 183 Spec not peculiar Color white

Cetus 196 Spectrum prob. III color

8 4 reddish

8 7 Cetus 190 Color white - Spec. not peculiar.

Dec. 31. 1880.
Comet. W. obs.

5 44 +30°.8
7 26
−2 18

Pos. 0 68.9
45 W. obs.
Set at 113.9 for transits.
Order star. comet. star. comet.
~~Both in Southern half~~
Both in northern half of square.
Seven complete sets.
Reject third and fifth sets.

Comp. star a
τ = $4^h 31^m 53^s$
Coarse Hour = $10^h 47^m$
" Decl = +30.9°
Fine " = +0.9 div.
" Hour = $22^h 46^m$ + 2.8 div.
Mag. of Comp. star 7.8.

~~Comp. star a~~
$4^h 36^m 18^s$ = time of star b over bar.
$37^m 33^s$ = " " " a " "
Star b north of a 5.7' Mag. of b 8
~~5.8~~ c fol. a 3^s c is south of a
13' Mag. of c 8.3
4^h 46 21 = time of star d passing bar
47 12 = " " " c " "

Dec. 31, 1880

d is 1.7' south of c Mag of d 8.7

$4^h\ 49^m\ 27.5^s$ = time of star e passing bar
49 41.5 = " " " c " "

Mag. of e 9
f fol. e 2.5^s & is 4.5' south of it
Mag. of f = 8.3
g prec. f 1^s & is 5' south of it.
Mag. of g = 8.9

App. setting on Comet

$t = 4^h\ 55^m\ 48^s$
Coarse Hour = $11^h\ 9.5^m$
" Decl. = + 30.95°
Setting on α Aurigae
$t = 4^h$ 58 20
Coarse Hour = $11^h\ 49.5^m$
" Decl. = + 45.8°
Fine " = + 1.3 div.
" Hour = $23^h\ 50^m$ + 0.6 div

Jan. 1. 1881.

Opened dome at 5.00
tried various arrangements of prism.
ε Pegasi

6 0 β Urs. Min. / α Urs. Min. T. obs.
α Urs. Min. 3 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

Transits P. obs.

51m 55s.8 16.0 1st wire in finder
52 11.8 534 yellow
y–B 14.4 20.5 24.7 susp. line green
26.2 30.4 blue
33.7 37.9 2d wire in finder.

Same again

53m 8s.7 17.4
12.9 26.1
35.3 26.6
39.0 30.3
46.4 37.7

3d time

54 3.2 16.5
13.8 19.7 26.4
29.6 30.3
33.5
41.9 38.7

Another line susp. 0.4 from green to yellow

Jan. 1, 1881,

2d of the Birmingham stars

	m	s		
Y — B	56	3.3		1st wire of finder
		16.2	12.9	1st yellow
18.8		17.2	13.9	2d "
		35.0	31.7	blue
		42.8	39.5	2d wire of finder

	m	s		
	57	15.7	11.2	1st of finder
		26.9	12.2 ~~[illegible]~~	1st yellow
		27.9		2d "
18.4		38.7	23.0	another line
		47.3	31.6	blue
		54.3	38.6	2d of finder

	m	s		
	58	50.0		Same again.
			13.0	
	59	3.0		
			14.2	
		4.2		
18.5		12.0	22.0	
		21.5	31.5	
		29.0	39.0	

B 539

	16.0	24.7	30.4	37.9	12.9	13.9		31.7	39.5
	17.4	26.6	30.3	37.7	11.2	12.2	23.0	30.6	38.6
	16.5	26.4	30.3	38.7	13.0	14.2	22.0	31.5	39.0
B 534	16.6	17.7 25.9	30.3	38.1	12.4	10.3 13.4	22.5	31.6	39.0
	~~[illegible]~~ 44	68	80		32	34	58	81	
B 544	11.4	30.9	.	38.9					
	29	79							

Jan. 1, 1881.

3d. set of the Birmingham stars. Yellow line seen with difficulty; both yellow lines suspected, first only observed.

Y–B 2m 3s.8 1st wire of finder

19.4 15.2 11.4 yellow

34.6 30.8 2d blue

42.9 39.1 2d wire of finder.

again.

3m 19s.3

19.3 31.0 11.7

50.3 31.0

58.0 38.7

3d time

4m 9s.2

19.7 20.4 11.2

40.1 30.9

48.0 38.8

Summary Results.

			[illegible].58		Bl.
B 534			44	68	80
B 539	32	34	58		81
B 544	29				79

		Yel.	Gr.	Bl.
H.C.9.		36	52	66
B 589	28	36	52	74

Jan 1, 1881

H. C. 9

9ᵐ 15.2ˢ 15.8 1st wire finder
31.0 more ref. end red band
35.6 20.4 " " " green "
41.3 26.1 centre of blue "
54.2 39.0 2d. wire finder

again

10ᵐ 11.0ˢ 13.2
24.2
31.1 20.1
36.0 25.0

lost from moisture on eyepiece

3d time

12ᵐ 18.4ˢ 12.5
30.9 19.2
37.6 25.1
43.5 38.2 doubtful
56.6

15.8	20.4	26.1	39.0
13.2	20.1	25.0	
12.5	19.2	25.1	38.2
~~11.5~~ 13.8	19.9	25.4	38.6
36	52	66	

Jan. 1, 1881.

Looked for Birmingham 592.
found a star
5^s p 7' n of a 5 magn.
Spectrum of star discontinuous,
not ~~strict~~ normal fourth type.

Birmingham 583 (2 Pegasi)

6 55 Bands suspected.

Birmingham 589.

$22^s.2$ 1st wire finder
8.8
33.0 Less refr. band in yellow
14.1
36.3 less refr. edge.
20.1
42.3 More refr. band in yellow
27.9
50.1 more refr. edge
37.8
reject, 60.0 Green, more refr. edge
Blue, " " "
2d wire finder

m	s		Sum
49	53.2	11.2	11.2
50	4.4	2.6	13.8
	7.0	6.0	19.8
	13.0	8.1	27.9
	21.1	10.3	38.2
	31.4		

8.8	14.1	20.1	27.9	37.8
11.2	13.8	19.8	27.9	38.2
10.2	12.9	19.0	27.7	37.8
11.8	14.1	20.0	28.8	37.8
20	149	29	63	37.9
10.5	13.7	19.7	28.1	

checked.

Jan. 1, 1881.

3d set

51	10.0		
		10.2	10.2
	20.2		12.9
	22.9	2.7	
	29.0	6.1	19.0
	37.7	8.7	27.7
	47.8	10.1	37.8
52	6.2	(belongs probably to next set)	
		11.8	11.8
52	18.0		
	20.3	2.3	14.1
	26.2	5.9	20.0
	35.0	8.8	28.8
	44.0	9.0	37.8

β Persei

Note at the end says R112 was 20s ~~fast~~ slow.

7h 48	42.1			P. obs.
	80.0	37.9 < >		
49	224.2			
49	257.8	33.6 < >		
		71.5 < > 6 >	35.75	~~2.45~~ 2.46 >
7 48.5 <		2.45		
7 48.8 < >				
49	43.7			P. obs.
	78.5	34.8 < >		
50	223.0			
50	254.2	31.2 >		
		66.0 < >	33.00	2.64 >
7 49.5 <		2.64 >		
7 49.8 < >				

checked F.W.

Jan. 1, 1881.

7 51 40.6 P. obs
76.8 36.2 < >
52 220.3 32.0 < >
52 252.3
7 51.52 68.2 < > 2.57 < >
7 51.8 < > 34.10

---

7 57 34.9 29.0 < > P. obs
67.9
58 220.3 31.3 < >
58 251.6
7 57.5 < 60.3 < > 2.85 < >
7 57.8 < > 30.15
58.5 36.9 P. obs
70.0 33.1 < >
59 215.8 36.6 < >
59.5 252.4
7 59.0 < 69.7 < > 2.52 < >
7 59.3 < > 34.85
8 0 32.1
68.9 36.8 < > P. obs.
1 212.7 34.1 < >
1 246.8
8 0.5 < 70.9 < > 2.48 < >
8 0.8 < > 35.45

---

4 30.6 36.6 < > P. obs
67.2
5 213.6 31.3 < >
5 244.9
8 4.5 < 67.9 < > ~~2.58~~ 7 < 2.58 >
8 4.8 > 33.95

Checked.

Jan. 1, 1884

β Persei

8 5 — 30.8 — P. obs

34.5 <>

65.3

6 — 214.1 — 31.7 <>

6 — 245.8 — 66.2 <> ~~2.6^{3}4~~ 2.64 >

33.10

8 5.5 <

8 5.8 < >

31.0 — P. obs

7 — 65.2 — 34.2 <>

8 — 212.0

8 — 248.0 — 36.0 <>

8 7.5 < — 70.2 <> ~~2.5^{1}4~~ < 2.50 >

8 7.8 < > — 35.10

30.6 — P. obs.

35.6 <>

8.5 — 66.2

10 — 212.6 — 35.0 <>

10 — 247.6

8 9.2 < — 70.6 <> 2.49 <>

8 9.5 < > — 35.30

10.5 — 30.2 — P. obs

33.1 <>

63.3

11 — 209.1 — 38.7 <>

11.5 — 247.8 — 71.8 <> 2.45 <>

8 11.0 < — 35.90

8 ~~11.2~~ 11.3 >

28.8 — 36.3 <> — P. obs

12 — 65.1

13 — 215.2 — 29.9 <>

12.5 — 245.1 — 66.2 > ~~2.6^{3}4~~ < 2.64 >

8 12.2 < — 33.10

8 12.5 < > ~~11.9~~

13 — 28.3 — 34.3 <> — P. obs.

62.6

14 — 207.8 — 35.9 <>

1.4 — 243.7 — 70.2 <> 2.50 <>

8 13.5 < — 35.10

8 12.8 < >

checks.

Jan. 1, 1881

8 15.5 27.2 P. obs.

68.3 41.1 < >

16 209.4 34.4 < >

16.5 243.8 75.5 < > 2.33 < >

8 16.0 <

8 16.9 < >

37.75

17 27.6 P. obs.

61.3 33.7 < >

18 209.6 35.0 < >

18 244.6 68.7 < > 2.55 < >

8 17.5 <

8 17.8 < >

34.35

21 31.0 W. obs

63.1 32.1 < >

22 205.8 37.5 < >

22 243.0 69.6 < > 2.52 < >

8 21.5 <

8 21.8 < >

34.80

22.5 28.1 36.0 < > W. obs.

64.1

23 206.1 34.9 < >

23.5 241.0 70.9 < > 2.48 < >

8 23.0 <

8 23.3 < >

35.45

24 27.0 W. obs

61.0 34.0 < >

25 204.4 38.7 < >

25 243.1 72.7 < > 2.42 < >

8 24.5 <

8 24.8 < >

36.35

Jan 1, 1881

checks					
8	26	26.9			P. obs
		58.1	31.2'< >		
	27	~~208.7~~			
		208.1	34.2'< >		
	28	242.3	65.4'< >	2.66< >	
8	27.0<		32.70'		
8	27.3 >				
	28.5	26.4			P. obs
		59.4	33.0'< >		
	29	207.8	33.8'< >		
	29.5	241.6	66.8'< >	2.61< >	
8	29.0<		33.40'		
8	29.3< >				
	32.5	27.1			P. obs
		63.9	36.8'< >		
	33	205.4	33.4'< >		
	33.5	238.8	70.2'< >	2.50< >	
8	33.0<		35.10'		
8	33.3< >				
	36	28.8			W. obs
		65.2	36.4'< >		
	37	204.9	37.3'< >		
	36.5	242.2	73.7'< >	2.39< >	
8	36.2<		36.85		
8	36.5< >				
	37	22.8			W. obs
		64.1	41.3'< >		Images do not reverse well
	38	204.0			
	38	239.3.	35.3'< >		
8	37.5<		76.6'< >	2.30< >	
8	37.8< >		38.30'		
	39	27.2	32.5'< >		W. obs
		59.7			
	40	202.1	40.1'< >		
	40	242.2	72.6'< >	2.42< >	
8	39.5<		36.30'		
8	39.8< >				

checked

Jan. 1, 1881.

8 44.5 22.5 W. obs.
63.2 40.7 < >
46 200.0 Probably misunderstood observer.
46 242.0 42.0 < >
82.7 < > ~~2.14~~ 2.12 >
8 45.2 <
8 45.5 < > 41.35
46.5 24.5 W. obs.
39.9 < >
64.4
48 ~~203.3~~ Reject Star too near edge of [field
205.0
48.5 238.9 33.9 < >
73.8 < > 2.38 < >
8 47.5 <
8 47.8 < > 36.90
50 24.1 35.9 < > W. obs
60.0
51 204.7 36.7 < >
51.5 241.4 72.6 < > 2.42 < >
8 50.8 <
8 51.5 < > 36.30
54 22.1 40.0 < > W. obs
62.1
55 200.9 37.9 < >
55 238.8 77.9 < > ~~2.25~~ 2.26 >
8 54.5 <
8 54.8 < > 38.95
56 23.5 39.6 < > S. obs
63.1
57 194.3 47.9 < > 1.98 < >
58 242.2 87.5 < >
8 57.0 < 43.75
8 57.3 < >

Checked

Jan 1, 1881

8	58.5	16.3			S. obs
		65.3	49.0˙< >		
	60				
		196.5	45.5˙< >		
9	0.5	242.0	94.5˙< >	1.80< >	
8	59.5<		47.25˙		
8	59.8< >				
	1	16.6	46.0˙< >		S. obs
		62.6			
	2	197.1	44.2˙< >		
	2	241.3	90.2˙< >	1.91< >	
9	1.5<		45.10˙		
9	1.8< >				
	3.5	19.4			W. obs
		59.4	40.0˙< >		
	5	200.0			
	5	237.9	37.9˙< >		
9	4.2<		77.9˙< >	5 ~~2.28~~ 2.26 >	
9	4.5< >		38.95˙		
	6	21.9			W. obs
		56.4	34.5˙< >		
	7	200.5	35.4˙< >		
	7.5	235.9	69.9˙ >	2.51< >	
9	6.8<		34.95˙		
9	7.1< >				
	8	17.9	43.3˙< >		W. obs
	9	61.2			
		197.1			
	9	237.0	39.9˙< >		
9	8.5<		83.2˙< >	2.10< >	
9	8.8< >		41.60˙		

Checked.

Jan 1, 1881

9 26 7.2 53.9 < > S. obs

61.1

27 192.2 45.6 < >

27.5 237.8 99.5 < > 1.67 < >

9 26.8 <

9 27.1 < > 49.75

28 13.0 S. obs.

50.0 < >

63.0

30 193.9

53.1 < >

30.5 247.0 103.1 < > 1.58 < >

9 29.2 <

9 29.5 < > 51.55

31.5 11.5 S. obs

51.2 < >

62.7

33 190.7 51.7 < >

33.5 242.4 102.9 < > 1.59 < >

9 32.5 < 51.45

9 ~~32.6~~ 32.8 < >

Comet,

5 45 +30.4

4 18

−1 27

29

−1 16

R.A. 5 48 +30.4

5 7

41

checked

Jan. 1, 1881
β Persei

9 43 4.1 S. obs.
64.1 60.0 <>
44 186.0
45 243.1 57.1 <>
117.1 <> ~~1.26~~ 5< 1.26 >
58.55
9 44.0<
9 44.3<>

45.5 6.3 S. obs.
62.7 56.4 <>
47 188.1
48 245.6 57.5 <>
113.9 <> 1.33 <>
56.95
9 46.8<
9 47.1<>

48.5 8.7 S. obs
63.6 54.9 <>
50 186.9
50.5 240.1 53.2 <>
108.1 <> 1.46 <>
54.05
9 49.5<
9 ~~49.8~~< 49.8>

52.5 17.1 W. obs
55.4 38.3 <>
54 194.2
54 238.9 44.7 <>
83.0 <> 2.11 <>
41.50
9 53.2<
9 ~~54.8~~
53.5<>

55.5 19.9 W. obs.
56.2 36.3 <>
56 194.1
56.5 235.5 41.4 <>
77.7 <> ~~2.26~~ 7< 2.26 >
38.85
9 55.8<
9 56.1<>

57.5 15.9 W. obs
58 57.8 41.9 <>
190.3
58.5 240.9 50.6 <>
92.5 <> 1.85 <>
46.25
9 58.0 58.3<>
9 ~~57.8~~

Jan. 1. 1881.

Checked					
10	3	10.0			H. obs
			53.9' <>		
		63.9			
	4				
		195.2	42.8' <>		
	4	238.0	96.7' <>	1.74 <>	
10	3.5 <		48.35'		
10	3.8 <>				
	5	12.8			H. obs
			48.8' <>		
		61.6			
	6				
		191.9	41.0' <>		
	6	232.9	89.8' <>	1.92 <>	
10	5.5 <		44.90'		
10	5.8 <>				
	7	10.9			H. obs
		59.4	48.5' <>		
	8				
		192.0	45.8' <>		
	8	237.8	94.3' <>	1.80 <>	
10	7.5 <		47.15'		
10	7.8 <>				
	9.5	16.2			P. obs.
			40.5' <>		
		56.7			
	10				
		190.0	47.5' <>		
	10.5	237.5	88.0' <>	1.97 <>	
10	10.0 <		44.00'		
10	10.3 <>				
	11	8.1			P. obs
			49.6' <>		
		57.7			
	12				
		191.7	47.2' <>		
	12	238.9	96.8' <>	1.74 <>	
10	11.5 <		48.40'		
10	11.8 <>				
	13	11.5			P. obs
			43.1' <>		
		54.6			
	14				
		190.6	49.2' <>		
	14	239.8	92.3' <>	1.85 <>	
10	13.5 <		46.15		
10	13.8 <>				

Jan. 1, 1881

checks					
8h	14.5	6.9			P. obs
		60.1	53.2'< >		
	15	190.8			
			47.0'< >		
	15.5	237.8			
8	15.0<		100.2'< >	1.65< >	
8	15.9< >		50.10'		
	16	11.4			P. obs.
		56.3	44.9'< >		
	17	192.0			
			47.9'< >		
	17	239.9		1.84< >	
8	16.5<		92.8'< >		
8	16.8< >		46.40'		
	17	14.2			P. obs
			46.9'< >		
		61.1			
	18	190.0	45.1'< >		
	18	235.1	92.0'< >	1.86< >	
8	17.5<		46.00'		
8	17.8< >				
	23	9.8	46.2'< >		~~P. obs~~
		56.0			W. obs
	24	192.5			
			43.4'< >		
	24.5	235.9	89.6'< >	1.92< >	
8	23.8<				
8	24.1< >		44.80'		
	25	11.9			W obs
		54.3	42.4'< >		
	26	187.8			
			50.9'< >		
	26	238.7	93.3'< >	1.83< >	
8	25.5<				
8	25.8< >		46.65'		
	27	7.2	51.1'< >		W obs
		58.3			
	28	190.9			
			43.3'< >		
	28	234.2	94.4'< >	1.80< >	
8	27.5<				
8	27.8< >		47.20'		

checked
Jan 1, 1881

10 30 8.1 50.5 < > P. Obs.
58.6
31 191.1 46.2 < >
10 32 237.3 96.7 < > 1.74 < >
48.35
10 31.0 <
10 31.3 < >

32 9.4 45.0 < > P. Obs.
54.4
32 187.0 49.1 < >
32 236.1 94.1 < > 1.81 < >
47.05
10 32.0 <
10 32.3 >

33 7.4 49.6 < > P. Obs.
57.0
34 190.0 43.6 < >
34 233.6 93.2 < > 1.83 < >
46.60
10 33.5 <
10 33.8 < >

W. obs
37 13.0 45.8 < >
58.8
38 192.7 45.2 < >
39 237.9 91.0 < > 1.89 < >
45.50
10 38.0 <
10 38.3 < >

40 10.9 46.3 < > W. obs.
57.2
41 187.7 51.0 < >
41 238.7 97.3 < > ~~1.74~~ 3 < 1.72 >
48.65
10 40.5 <
10 40.8 < >

Checkes

Jan 1 1881

10 41 11.1 44.9'< > W. obs.
560
42 1938
44.0'< >
42 2378 88.9'< > ~~1.94~~ 5< 1.94 >
10 41.5< 44.45'
10 41.8< >

43 9.2 47.6'< > P. obs.
56.8
44 186.1
56.9'< >
44 237.0 98.5'< > ~~1.67~~ 70< 1.69 >
10 43.5< 49.25'
10 43.8< >

44 6.8 52.4'< > P. obs.
59.2
45 190.0
46.1'< >
45 236.1 98.5'< > ~~1.69~~ 70< 1.69 >
10 44.5< 49.25'
10 44.8< >

46 8.0 45.5< > P. obs.
53.8
47 186.8
53.2'< >
47 240.0
10 46.5< 98.5'< > ~~1.69~~ 70< 1.69 >
10 46.8< > 49.25'

48 7.8 49.2'< > W. obs.
57.0
49 192.6
40.4'< >
49 2330
10 48.5< 89.6'< > 1.92' >
10 48.8< > 44.80'

Checked

Jan 1 1881

10 49 11.5 47.6' < > U. obs.
59.1
50 189.0 44.9' < >
50 233.9
10 49.5 <
10 49.8 < >
92.5' < > 1.85 < >
46.25'

51 9.0 49.2' < > U. obs
55.2
52 188.1
52 233.8 45.7 < >
10 51.5 <
10 51.8 < >
91.9' < > 1.86 < >
45.95'

53 4.0 50.4' < > P. obs.
54.4
~~50.4~~
54 186.3
54 236.2 49.9' < >
10 53.5 <
10 53.8 < >
100.3' < > 1.65 < >
50.15'

54 3.9 51.7' < > P. obs.
55.6
55 191.8 47.4' < >
55 239.2
10 54.5 <
10 54.8 < >
99.1' < > 1.68 < >
49.55'

10 57 6.0 50.9' < > P. obs.
56.9
58 184.8
58 235.2 50.4' < >
10 57.5 <
10 57.8 < >
101.3' < > ~~1.67~~ 3 1.62 >
50.65

checked

Jan. 1. 1881.

Comet.

Pos. Zero. 22.3
45.

67.3

11 32 4.7
57.9 53.2° < > P. obs.
33 183.2
231.7 48.5° < >
33
---
11 32.5 <
11 32.8 < >
101.7° < > ~~1.61~~ 2 < 1.61 >
50.85°

11 33 6.6 45.9° < > P. obs.
52.5
34 185.7
232.9 47.2° < >
34
---
11 33.5 <
11 33.8 < >
93.1° < > 1.83 < >
46.55°

11 34 4.7
56.4 51.7° < > P. obs.
35 186.1
232.2 46.1° < >
35
---
11 34.5 <
11 34.8 < >
97.8° < > 1.71 < >
48.90°

11 37 5.0 47.0° < > S. obs.
52.0 Cloud
38 185.3
234.6 49.3° < >
39
---
11 38.0 <
11 38.3 < >
96.3° < > 1.75 < >
48.15°

<

checked

Jan 1. 1881

11 40 3.4 54.4°< > S obs

57.8

41 185.9 51.2°< >

41 237.1

105.6°< > 1.52< >

11 40.5<

11 40.8< >

52.80°

11 42 1.0 52.9°< > S obs

53.9

43 182.5 49.2°< >

43 231.7

102.1°< > 1.61< >

11 42.5<

11 42.8< >

51.05°

assumed to be 182.5
aug 25 – 96 [illegible]

11 44 0.9 53.7°< > P. obs.

54.6

45 186.4 43.1°< >

45 229.5

96.8°< > 1.74< >

11 44.5<

11 44.8< >

48.40°

assumed to be 4.9
aug 25 – 96 [illegible]

11 45 4.9 45.4°< > P. obs.

50.3

46 181.3 54.8°< >

46 236.1

100.2°< 1.65< >

11 45.5<

11 45.8< >

50.10°

11 47 0.0 54.2°< > P. obs.

54.2

48 187.1 42.0°< >

48 229.1

96.2°< > 1.75< >

11 47.5<

11 47.8< >

48.10°

Passing clouds.

Checks

Jan. 1, 1881.

11 49 5.0 W. obs.
51.9 46.9 < >
√0 186.0
51 231.1 45.1 < >
11 50.0 <
11 50.3 < >
92.0 < > 1.86 < >
46.00

11 51 5.8 W. obs.
52.1 48.3 < >
√2 185.2
52 231.2 46.0 < >
11 51.5 <
11 51.8 < >
94.3 < > 1.80 < >
47.15

11 53 6.2 W. obs.
52.2 46.0 < >
√4 182.0 51
54 233.1 ~~49~~.1 < >
11 53.5 <
11 53.8 < >
1.73 < >
~~95.1~~
97.1 < >
48.55

11 55 6.6 P. obs.
49.9 43.3 < >
√5 186.6
55 231.3 50.7 < >
11 55.0 <
11 55.3 < >
94.0 < > 1.81 < >
47.00

11 56 0.4 P. obs.
53.2 52.8 < >
√7 181.0
57 227.0 46.0 < >
11 56.5 <
11 56.8 < >
98.8 < > 1.69 < >
49.40

Jan. 1, 1881. P. obs.

11 57 6.4 45.6'<>
52.0
58 180.4 52.4'<>
58 232.8 98.0'<> 1.71'<>
49.00'

11 57.5'<
11 57.8'<>

Jupiter too low.

L. 112 was approximately 20s slow.

Comet.

~~Order ≡ * ≡ *~~
~~Both in southern half of square.~~
~~Comp. star double (rather close)~~
~~Main component 7.8 mag.~~

Pos. Zero. 25.6
45.
70.6

Order ≡ * ≡ *
Both in northern half of square.

Setting on comp. star.
$t = 8^h$ 19^m 22^s
Coarse H. Circ. 2^h 32^m
" Dec. " $+30°.3$
Fine " $+5.7$ div.
" H. Circ. 14^h 32^m $+1.8$ div.

Five complete sets on comet.
Reject 3d taps. in fourth set.

Jan. 1. 1881.

8 33 45 = time of star b over bar.
8 34 39.5 = " " " a " "

b is south of a 2'.5 and is 8.5 mag. ± (through haze.
Mag. of a (which is rather close double) = 7.8 ±

8^h 39^m $30^s.5$ = time of c over bar.
8 41 19.5 = " of b " "
c is north of b 5'
mag. of c. 8.7 ±
d precedes c 2 secs and is 4'.7 north of it.
mag. of d 9 ±

Setting on ι Aurigae.

t = 9^h 11^m $3^s.5$
Coarse H. Circ. 4^h 2^m
" Dec. " +45°.8
Fine H. Circ. 16^h 2^m ~~+2~~ +2.2 div.
" Dec. " +4.3 div.

Jan 2, 1889.

Dome opened at 5 15

Reddish 6m star D.M. 38°.3

4 37 W at 0 23
4 37
19h 46m 38°.2

= D.M. 38°.3780 Mag 5.5 red. Type III
= 19 Cygni

3 32 35.7
3 45 37.4
4 10 34 1

Examined spectrum of β Pegasi with camera lens

Looked at D.M. +46°.4214 no band seen.

B 85 D.M. +28° 707 8.1
Spect band discontin not IV a

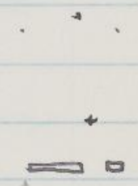
42

Jan. 2, 1881.

Suspected stars with singular spectra found at 1h 16m Σ 6°.5 at 3h 43m } See pp. 58, 521 for observations of a star hereabouts

3 43
4 59

Search—could not be found again



Search for plan. neb. C. Skies

Pole star at ~~175.9~~ 54.9
175.2 51.6 Set at 52.6
176.5

Began at 4 02

	lc. 56.4	14 29	56.4 05		4 ny.
47.4	49.5	217.0	07	0	
48.1	50.5	216.0		6	foll
40.?	42.4	224.1	12	7	
[51°0]	53.1	213.4	14		[illegible] Camp. [illegible]
	-5.7	272.?	17		
15.3	+17.7	248.8	18	13	
	lc 73.8	160.3	21		2 [illegible]
	lc 59.5	146.0	22		3 ny
	lc. 57.5	144.0			TV ?
	lc 80.8	167.3	27		? TV
16.6	+18.5	248.0	34	29	1 ny. a [illegible]

Ended at 4 37

3 55 6

Harv Comet ? lat. at 51°.0 4h 9m) ? G.C. 820
50°.9 4 5

Jan. 3, 1880.

B. 236.				B. 394.		
0h	32	55.0 ?		5h	38	0.0
	33	55.4			39	0.0
	34	55.6			40	0.0

~~B~~

6	2	55.5
	23	41.1
6	26	36.6
5	40	0.0
	46	36.6
0	34	55.6
1	21	32.2

Neb. G.C. 101.

0 32
0 46 +2°5
14

0 57
0 32
+25

~~Recognized~~ Identified region of G.C. 101.
Four Neb. previously obs. all visible.
Diff. A.R. +2° 84 & 85

Jan. 3, 1880.

2 50.0 Diff. dec. 11′
3 11.0 21.0 D.M. ~~[illegible]~~ 84 s.p. 85.

3 27.6
48.6 21.0

Transit of small star s.p. G.C. 101
then G.C.101. and +2° 85 – also neb. fol. +2° 8

6 12.5
13.0 1.0
23.0 10.0
39.4 16.4

6 58.0
59.1 1.1
4.4 10.3
21.2 16.8

~~8 31.2~~
~~31.6~~ ~~0.4~~
~~47.4~~
~~59.7~~

No other neb. seen in this vicinity.

9 14.1
15.6 1.5
25.2 9.6
42.0 16.8

The small star s p the neb supposed to be G.C.101 is about 0.′5 s of the neb. D.M. +2° 85 is about 1′ s of this neb and 1′ s of the following neb.

Jan. 3, 1880.
Reap. Jup. I. Phot. H. J. Obs.
Limit of Vis. Jup. III.

1 ~~15 20s~~ ~~75.0~~
~~105.0~~ String interferes

	1 16m	65.8	
			36.2
	$16^{h}\ 30^{s}$	102.0	
6 21		63.1	39.0
	17	102.1	152 37.60
		333.0	
		166.50	18.80
		83.25	

$6^{h}\ 26^{m}\ 48^{s}$	1^{h} 22 7.2	Sus.	
52	11.0	seen.	
57	15.7	68.1	
			34.9
27 07	26.5	103.0	
15	33.5	65.8	
			41.4
22	41.0	107.2	
27	46.0	58.8	
			53.0
32	51.2	111.8	
39	57.5	55.2	
			57.8
43	23 2.2	113.0	
50	9.0	53.0	
			59.3
56	15.0	112.0	
28 03	22.0	50.3	
			67.1
09	27.5	117.4	
17	36.5	47.6	
			73.1
27	46.0	120.7	

Jan. 3, 1880.

6	28	31	1 23		50.2		42.8	
		39			57.5		120.3	77.5
		46	24		5.2		39.5	
		54			13.2		124.2	84.7
	29	02			21.0		40.5	
		09			28.0		126.9	86.4
		19			38.0		38.8	
		31			50.0		127.7	88.9
		42	25		1.0		37.2	89.0
		53			11.5		126.2	
	30	03			22.0		38.9	87.9
		12			31.0		126.8	
					43.0		38.7	
	30	45	26	136 130 16 64	55.2		129.2	90.5
			26		10.0		37.7	
					27.5		126.4	88.7 17.9 2 89.60 44.80
					35.0	3320 1660 83.00	40.4	87.1
	31	36	26	100 120 220 55	49.0		127.5	
			27		0.0		38.3	
					16.0		126.8	88.5 15 6 87.80 43.90
					29.5	3330 16650 83.25	36.9	90.1
				14.3 6.0	42.5		127.0	
	32	32	27	203 51	57.0		38.6	88.0 17 8.1 89.05 44.52
			28		13.5		126.6	
					44.0	3291 16455 82.28	36.2	88.8
	33	41	29	121 01 00	53.5		125.0	
			29		4.5		37.9	88.9 17 88.85 44.42
					19.0		126.8	
						3219 16095 80.48		

Jan. 3, 1880.

	1	29	32.4	37.9	86.1
		14.7 6.0 20.7 5.2	46.6	124.0	
34 33		29	59.0	39.1	86.8 9 86.45 43.22
		30	9.0	125.9 32.69 16.345 8.172	

B 236

1 40 6.0
41 5.8

B 394

6 45 0.0
46 0.0

~~Pos. 126.0~~

Comet.

5 51 +30.1
3 49
~~-2 16~~
- 2 2
4 2
1 49
4 14
1 37
4 24
1 27
4 45
1 3

Jan. 3, 1880.

11 15 β Urs. Min. 1 α Urs. Min. 5 obs.
α Urs. Min. = ε Urs. Maj.
α Urs. Min. 2 γ Cass.

Comet.

6 52 +30.1
5 51
+1 1

8 19
2 32
5 47 +30.3

~~5 51 25 +30.1~~
5 49 +29.5
7 17
+1 28

Pos. Zero. 300.4
45.
345.4

Comp. star a

t=8 49 56
Coarse H. Circ. 2h 57.5
" Dec. " +29°.45
Fine H. Circ. 14m 58s +1.2 div.
" Dec. Circ. +1.2 div.

Order ☄ ☄ * *
Both in northern half of square.

Jan. 3, 1880.

8 53 48,0 = time of star b on bar.
8 55 42,0 = " " a " "

Mag. of a 7.9
" " b, 8.2
b north of a 7'.8

8 57 51 = time of a ovr. bar.
58 9.5 = " " three stars about in line in A. R. ~~abo~~ – middle being the brightest – about 9.5 mag. – mid. south of a 6' – the other two slightly fainter one 1¼' north and the other about as much south of the 9.5 mag.

Setting on ε Aurigae.

t = 9 8 43
C. H. Circ. 3^h 58^m
Coarse Dec. Circ. 45°.8
Fine H. Circ. 16^h 0^m +0.8 div.
Fine Dec. " +4.7 div.

Jan. 7, 1881

6 15 Looked at the stars No. 36 and 38 (Uran. Arg.) in Sculptor
Color reddish but spectrum not peculiar
Pobs.

No. 50. Same.
52 Slightly reddish.; spectrum not pec.
P obs.

113 Deep red.
Spectrum prob. 4th type (a)
2 bands in yellow more ref.
more marked;
band in green more refr. edge
not marked at first sight.
color very red. P obs

No. 115 Color not marked; bands suspected in spectrum, which however is probably not peculiar
P. obs.

6 40 No. 113 S. obs. Spectrum nowhere decidedly interrupted but showing some maxima of brightness, one certainly in the more refrangible part of the yellow, probably another somewhat less refrangible, and perhaps one or two in the green.

6 47 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 3 ε Urs. Maj.
α Urs. Min. 3 γ class

Jan. 7 1881

Phot R. Prism turned out.
Scale at 50

Book D M. 81° 25 + 81° 30
Both together scale reading 15
Ver. a 122½ + 127

Images of star c & d brought together at 155°

Comet, H. obs.

5   55   + 28°,1

5 4   5 7
1   3 2
5   5 6   2 5   + 27.6.
3   2
− 2 5 4

Looked for Comet - but not seen
Field rather bright ~~by~~ from Moon-light

Jan. 7. 1881.

H. C. Double ✱ 3

0 5 +7 2
7 14
3 9

3 17
0 5
3 1 2

W. obs.

This star appears to be D.M. + 7° 13.
Two stars found 7 to 8 magn., np & sf

~~$29^m 7^s$~~ $34^m 5^s$ $36^m 31^s$ $\Delta\alpha$ $2^m 26^s$
$\Delta\delta$ 5′

which seems to identify them as DM + 7° 5 & 13.
D.M. + 7°, 13 examined; no companion seen, but moon near.

Looked for H.C. 21; found a double star 7.8 & 9 mags, p 20° s 7″.

3 $46^m 22^s$ h $3^h 34^m$ δ −0°.5

Probably too far out in α.
A bright star follows about 40^s north 15′

~~Found another~~ H.C. 21 is probably
D.M. −0° 59

Looked for DM. −0° 63 (6.2 magn.)
Found this; then Nos. 58, 59, 60.
No companion seen to No. 59

Jan. 7, 1881.

Double H. C. 70.
2 9 +28.8 W. obs.
4 1~~2~~
+2 1

This double found

t = 4h 16m 15s
Coarse Hour = 2h 5m
" Decl = +23.9
Fine " = +4.5 div
" Hour = 14h 6m +1.5 div.
Pos. Ang. 95° - dist. 7s Mags 9.2 & 9.3

Setting on Jupiter
t = 4 22 57

Fine Hour = 15h 38m + 0.4 div
" Decl = +5.6

Reddish star having spectrum of fourth type. IVc P. Obs.
Brighter star in same A. R. and 5' north. D.M. 6°809, 8.5
t = 4 31 5 5.5 D.M. 6°.810 9.9 mag.
Coarse Hour = 11h 35m
" Decl = +6.2
Fine " = +5.3 div
" Hour 23h 34 +2.9 div
9 mag. t = 4h 33m 8.5 transit of star 1' north D.M. 6°815, 8

Jan. 7. 1881

$t = 4^h\ 33^m\ 56^s$ Star 1' south   8 mag.
Dm. 6° 819. 7.4

One dark band where orange & yellow join another in yellow Another in green Bright band between last two dark bands [W obs another dark band in blue
Brighter band immediately beyond
Beyond means towards red (by mistake)
~~One dark band in green~~.
Spectrum consists of bright bands covering red & yellow & a narrower band in green   Red end of spectrum to left.   P. obs

5. Cephei,

0 50
4 51
4 1

9 52   129.4   ~~9 52~~
236.4 107.0
310.8 Rejected
55   55.8

57   56.7 77.7   P. obs.
134.4
239.2 71.2
58   310.4
148.9

Jan. 7, 1881.

9h 58.5 57.2 P. obs.
129.8 72.6
235.0 72.8
10h 0 307.8 145.4

0.5 57.4 P. obs.
130.0 72.6
234.7 73.1
1.5 307.8 145.7

Focus at 4.33

4.5 59.6 W. obs.
124.6 65.0
237.4 73.7
6.5 311.1 138.7

6.5 52.0 W. obs.
131.6 79.6
242.2 62.2
8 304.4 141.8

8.5 63.1 W. obs.
123.2 60.1
235.2 75.1
10 310.3 135.2

Jan. 7, 1881.

Star c + d

10^h 15 42.7 P. obs.
130.2 87.5
226.8 91.1
16.5 317.9 178.6

17 47.8 P. obs.
138.4 90.6
230.0 81.0
18.5 311.0 171.6

19 51.0 P. obs
133.4 82.4
228.1 83.9
20.5 312.0 166.3

10 17 α Urs. Min 2 β Urs. Min. W. obs.
" " " 3 γ Cassiop.
Focus 426.2

10 21 47.0 86.0 W. obs.
133.0
226.7 97.5
23 324.2 183.5

(37.6) app wrong W. obs
24 36.8
157.2

Jan 7. 1881

10 27 53.1 76.9 W. obs.
130.0
224.2 100.8
28 325.0
177.7

10 29 46.0 95.2 W. obs.
141.2
234.5 71.6
30 306.1
166.8

31 52.9 79.1 S. obs.
132.0
225.8 93.4
34 319.2 172.5

32 δ Urs. min. = β Urs. min. P. Obs.
& 1' ε Urs. Maj.

34 45.7 90.2 S. obs.
135.9
229.3 91.5
36 320.8 181.7

36 51.2 85.8 S. obs.
137.0
229.2 84.8
37 314.0 170.6

Jan. 7. 1881.

10	40	48.8	77.9	81°25 & 30	P. obs.
		126.7			
		233.8			
	41	311.9	78.1		
			156.0		
	41	51.7			P. obs.
		129.5	77.8		
		232.6			
	43	312.0	79.4		
			157.2		
	43	51.2			P. obs.
		130.6	79.4		
		238.1			
	45	310.4	72.3		
			151.7		
	46	56.9		81°25 & 30	S. obs
			70.2		
		127.1			
		229.8	82.2		
	47	312.0			
			152.4		
~~10~~	~~48~~	46.3	clock stopped		S. obs
10	50	56.8			
		128.9	72.1		
	~~8~~	240.5	67.5		
	51	308.0			
			139.6		

Jan. 7. 1881

10 52	61.5		looks decidedly brighter. S. ds.
10 53	55.1	74.2	
	129.3		
	235.5	73.1	
55	308.6		
		147.3	
			81° 25 & 30
10 57	49.7	80.5	W. ds.
	130.2		
	237.7	66.0	
58	303.7		
		146.5	
10 58	59.2	66.8	W. ds.
	126.0		
	228.1	84.6	
11 0	312.7		
		151.4	
11 00	49.1	83.1	W. ds.
	132.2		
	243.8	58.4	
11 01	302.2		
		141.5	

Jan. 7. 1881.

Swift's Comet.

5 56 +27.6
8 22

---

2 26
 34
2 38
 4[illegible]
2 47
8 52
5 56

---

2 56

Pos. Zero. 253.8
45.

298.8

Comp. star.
t = 10^h 11 50.
C.H.C. 4^h 14^m
C.D.C. +28.25
Fine H.C. 16 14 +1.9 div.
" Dec. C. +3.6 div.

Jan. 7. 1881.

10 16 12.5 = time of star b over bar.
10 17 52.5 " " " a " "
b 6' south of a
mag. of a 8 — mag. of b. 9

10 19 44.5 = time of c over bar.
10 20 41.5 = " " b " "
~~b~~ c in same dec. as b.
mag. of c = 9.2

10 22 42.5 = time of d over bar.
23 7.0 = " " b " "
d 3½' south of b.
mag. of d 9.5 —

10 25 9.5 = time of ε over bar.
26 42.5 = " " c " "
mag. of ε 7.8 and 5' south of c.

Order ☄ ☄ * * W. obs.
Comet in southern and star in northern half of square.

Approx. setting on ☄
t = 10 36m
A.C. 4h 40m
Dec. C. +28.7

Six complete sets - reject third set.
Second tap on ~~the~~ comet in first set prob. 1 sec. late.

Jan. 8, 1881.

81° 25 - 30

7h 18	71.7	123.4		P. obs.
	195.1		64.7	
	256.3		61.2	
19	7.0	110.7	125.9	
		234.1		
	~~187.6~~			
21	77.0	109.6	70.0	P. obs.
	186.6		63.7	
~~22~~	250.3	116.7		
22	7.0	226.3	133.7	
~~22~~	~~7.0~~	~~1.5~~		
22.5	71.2			P obs
	190.1	118.9	59.9	
	253.7	117.6	63.6	
24.5	11.3	236.5	123.5	
25.5	73.1	118.7		U. obs
	191.8			
	255.0	112.9		
27	7.9	231.6		
30	77.8			U. obs
	185.0	66.8		
	255.5	70.5		
31	11.0	137.3		

Jan 8 1881

7	31.5	73.1			H. obs.
		186.3	67.7		
		255.6	69.3		
	33	5.4	137.0	223.0	
	34.5	8.1			P. obs
		74.4	66.3		
		189.3	61.6	232.1	
	35.5	250.9	127.9		
	36	7.8	65.1		P. obs
		72.9			
		186.4	70.0		
	37	256.4	135.1	224.9	
	37.5	4.5			P. obs.
		76.0	71.4		
		192.4			
	38.5	252.4	60.0	228.6	
			131.4		
	39.5	12.5			~~P~~
		73.1	60.6		H. obs.
		186.5	70.5		
	40.5	257.0	131.1	228.9	
	41	4.4			H. obs.
		76.4	72.0		
		190.2	63.5	224.5	
	42.5	253.7	135.5		

Jan. 8, 1881.

7h 43 8.6
73.9 65.3 W. obs
184.0
44.5 257.9 73.9
139.2 220.8

Star c + d

47 80.3 103.5 P. obs.
183.8
263.8
48 1.4 107.6
211.1

Star at 81° 30 disapears at reading 50

49 82.4 P. obs
179.2 96.8
261.8
50 1.2 99.4
196.2
50.5 79.8 P. obs
186.7 106.9
256.7 116.1
51.5 2.8 223.0

Jan 8, 1881

7 52.5 86.7 W. obs

176.8 90.1

260.1 103.0

54 3.1 193.1

One minute to be subtracted from the preceding readings

54 79.0 105.2 W obs

184.2

265.0

55 359.9 94.9

200.1

55 83.1

5 178.8 95.7 W ob

257.7 104.4

57 2.1 200.1

8 55 β Urs. Min., 1 α Urs. Min., S. obs.
α Urs. Min., 2 ε Urs Maj;
α Urs. Min. 3 γ Cass.

Jan. 8, 1881.

Ver. a reads 136
Set at 100
Stars 81 25+30

7 59 72.4
187.6 115.2 P. obs.
256.6 109.8
8 0 6.4 225.0

1 74.4
185.3 110.9 P. obs
256.3 111.4
2 7.7 222.3

2 76.8
187.6 110.8 P. obs
258.8 106.7
3 5.5 217.5

5 79.8
185.2 105.4 W obs
253.3 114.8
6 8.1 ~~[illegible]~~
220.2

6 75.2
185.8 110.6
261.2 102.1 W. obs
7 3.3 212.7

Jan 8, 1881.

8 8 77.9
185.1 107.2
W. obs
254.1 113.1
9 7.2 220.3

11 72.6
188.4 115.8
P. obs.
258.4 110.4
13 8.8 226.2

13 74.2 113.6
187.8
P. obs.
255.9 114.9
14 10.8 228.5

14 71.2
183.6 112.4
P. obs.
255.2 112.6
15 7.8 225.0

16 78.3 107.6
185.9
W. obs
255.0 112.7
17 7.7 220.3

W. obs
18 73.6 113.7
187.3
256.0 108.5
19 4.5 222.2

Jan. 8, 1881.

8	19	76.9		
		184.2	107.3	W. obs.
		255.7	111.1	
	21	6.8	218.4	
	21	70.6		
		187.4	116.8	P. obs.
		255.7	111.0	
	22	6.7	227.8	
	23	77.0		
		186.2	109.2	P. obs
		255.8	112.5	
	24	8.3	221.7	
	24	68.2		
		184.9	116.7	P. obs.
		259.4	105.9	
	2~~4~~5	5.3	222.6	
	26	78.8		
		185.9	107.1	W. obs.
		252.6	114.4	
	28	7.0	221.5	
	28	73.1		
		188.1	115.0	W. obs
		258.0	109.1	
	29	7.1	224.1	

Jan. 8, 1881.

8	30	75.9		
		183.2	107.3	W. obs
		254.8	116.9	
	31	11.7	224.2	
	32	75.8		
		188.7	112.9	P. obs.
		256.8		
	33	357.7	100.9	
			213.8	
	34	76.4		
		183.7	107.3	P. obs.
		257.3	117.4	
	35	4.7	224.7	
	35	73.7		
		189.2	115.5	P. obs.
		255.8	104.8	
	36	0.6	220.3	
	38	79.1		
		184.2	105.1	W. obs.
		255.0		
	39	9.9	114.9	
			220.0	

Jan. 8, 1881

8	39	74.3		
		188.0	113.7	
		258.3		W obs
	40	4.4	106.1	
			219.8	
	~~40~~ 40	78.8		
		182.5	103.7	
		251.9		W. obs
	41	7.0	115.1	
			218.8	
	42	70.4		
		188.3	117.9	P. obs.
		256.6		
	44	8.0	111.4	
			229.3	
	46	78.6		
		183.8	105.2	P. obs.
		258.7		
	47	9.0	110.3	
			215.5	
	48	71.4		
		190.0	118.6	P. obs.
		258.2		
	49	3.1	104.9	
			223.5	
	49	81.0		
		183.0	102.0	W. obs.
		253.4		
	50	9.2	115.8	
			217.8	

Jan. 8 1881

8 51 72.0
189.1 117.1
255.8 W. obs.
52 6.2 116.4
227.5

52 77.9
181.3 103.4 W. obs.
251.0 117.0
53 8.0 220.4

54 73.4
189.3 115.9 P. obs.
252.4 113.7
55 6.1 229.6

56 72.2
188.7 116.5 P. obs.
252.0 114.3
57 6.3 230.8

58 71.7
186.3 114.6 P. obs.
255.5
59 7.9 112.4
227.0

9 0 80.6
181.5 100.9 W. obs.
249.9
1 9.1 119.2
220.1

Jan. 8, 1881.

Set at 76.6

~~9h 3~~ ~~182.0~~
~~247.1~~ 6 5.1 reject.
~~7.9~~

9 5 70.2
186.3 116.1 W. obs
257.1 107.5
6 4.6 223.6

6 74.3
183.1 108.8 W. obs.
249.3 119.7
7 9.0 228.7

9 76.4 This set Star c + d.
180.2 103.8 P. obs.
256.3 105.9
11 2.2 209.7

11 81.2
181.0 99.8 P. obs
262.2 94.7
12 356.9 194.5

Jan 8, 1881

9	13	83.9	92.9	P. obs.
		176.8		
		258.6	101.7	
	14	0.3	194.6	

Cl'd

9	19	82.2	95.0	W. obs.
		177.2		
		257.3	110.6	
	20	~~2~~7.9	205.6	
9	21	79.1	104.9	W. obs.
		184.0		
		267.8	89.2	
	22	357.0	194.1	
9	22	83.0	91.1	W. obs
		174.1		
		252.4		
	23	5.0	112.6	
			203.7	

Jan. 8. 188x'

81° 25 + 30

9 25 73.7 P. obs.
183.4 109.7
250.0 120.8
26 10.8
230.5

26 67.4 P. obs.
185.8 118.4
256.2
27 5.7 109.5
227.9

27 72.7 P. obs.
184.8 112.7
250.2
28 10.1 119.9
232.0

9 30 76.2 108.7 W. obs
184.9
253.0 115.2
31 8.2
223.9

31 71.2 W. obs
189.4 118.2
258.0 106.9
32 4.9 225.1

Jan 8 1881

9 32 74.9
181.2 106.3
247.3 P. obs.
33 8.0 120.7
227.0

34 68.8
190.4 121.6
251.4 P obs.
35 5.8 114.4
236.0

36 71.1
188.4 117.3 P. obs.
250.9
37 6.9 110.0
227.3

38 71.8 114.4 P. obs.
186.2
257.3 107.1
40 4.4 221.5

40 72.7
187.1 114.4 P. obs.
252.0 111.8
41 3.8 226.2

41 71.3
183.8 112.5
256.6 P. obs.
42 6.2 109.6
222.1

Jan. 8, 1881.

9 46 73.2
183.2 110.0 W. obs.
252.9 114.6
47 7.5 224.6

~~47~~
48 70.2
188.8 118.6 W. obs.
255.1 107.7
49 2.8 226.3

49 76.9
181.6 104.7 W. obs.
248.0 122.2
50 10.2 226.9

51 68.0
188.1 120.1 W. obs.
259.1 102.1
52 1.2 222.2

52 77.9
181.0 103.1 W. obs.
247.2 121.4
53 8.6 224.5

54 68.2
186.6 118.4 W. obs
258.2 100.1
55 358.3 218.5

Jan. 8. 1884.

9	58	72.2	115.5	P. obs.
		187.7		
		255.1	113.8	
	59	8.9	229.3	
10	1	72.3		
		184.1	111.8	P. obs.
		253.3	113.9	
	2	7.2	225.7	
	2	68.0		
		183.4	115.4	P. obs.
		255.5	107.7	
	3	3.2	223.1	
	4	75.0		
		18.2.7	107.7	W. obs.
	~~5~~	261.4	98.3	
	6	359.7	206.0	
	6	77.0	104.7	W. obs
		181.7		
		255.0	110.3	
	7	5.3	215.0	
	7	66.2	119.9	W. obs
		186.1		
		259.0	99.2	
	8	358.2	219.1	

Jan. 8, 1881.

10 10 71.7 P. obs.
183.2 111.5
251.8
11 6.2 114.4
225.9

11 69.9
187.8 117.9 P. obs.
247.7
13 4.7 117.0
234.9

13 69.3 P. obs.
185.8 116.5
255.8
14 2.3 106.5
223.0

~~16~~ ~~66.8~~ Clock gave out. ~~W. obs.~~

18 65.2
190.1 124.9 W. obs.
257.1 106.1
19 3.2 231.0

~~19~~ ~~7.1~~
20 77.0 W. obs.
100.0
177.0
246.1 125.0
21 11.1 225.0

Jan 8, 1881.

10	21	67.6		
		189.0	121.4	W. obs.
		250.2	107.8	
	23	358.0	229.2	
	32	70.2		P. obs.
		188.1	117.9	
		251.5		
	33	2.6	111.1	
			229.0	
	33	71.4		P. obs.
		184.2	112.8	
		252.3		
	35	8.8	116.5	
			229.3	
	35	72.6		P. obs.
		182.3	109.7	
		259.2		
	36	3.8	104.6	
			214.3	
10	[49]	69.9	115.2	W obs
		185.1		
		257.9		
	50	356.0	98.1	
			213.3	

Jan 8, 1881

10 50   78.3   98.9   W obs
177.2
246.0   119.0
52   5.0
217.9

10 52   66.7   123.2   W obs
189.9
259.7   95.4
355.1
218.6

Neither of stars compared is
81° 30

To bring 81° 25 & 81° 30 together
pos. circle must be set at 175.

Ap 11   10   81°25 is nearly equal to C Pobs
12   ..   .. 0.2 mag. fainter than C Wobs

Swifts' Comet -

5 56   +27.6
9 41
3 45

9 52
5 56
3 56

Jan. 8. 1881.

Comp. star a

t = 11 38 √ 3.0

C. H. C. 5^h 39.5 √

C. Dec. C. $+27^\circ.9$ √

Fine H. C. 17^h 40 + 0.6 div.

" Dec. C. +5.3 div.

b fol a 6.5 secs.

c " b 16.5 "

d " c 12 "

e " a 85 "

b 2' south of a

c $\frac{1}{4}$' " " b

d $\frac{1}{4}$' north " c

e 5' South " a

Mag. of a 7.8

" " b 8.9

" " c 8.8

" " d 8.7

" " e 7.6

Order ☄ ☄ * *

Comet in southern and star in northern half of square.

2d. tap on comet in first set about 1 sec. late.

Five or six complete sets. – reject partial sets. Mag. of comp. star 7.8 ± Stars rather low so that mag. cannot be estimated with very great

Jan. 8. 1881.

Setting on Castor.

t = 11 58 28

C. H. C. 4^h 30^m

C. Dec. C. + 32°.15

Fine dec. C. +1.9 div.

" H. Circ. 16^h 30^m +2.5 div.

Jan. 10. 1881.

Bond 236.				Bond 394.	
2	18	51.2	6	57	0.0
	19	51.3		58	0.0
	20	51.3		59	0.0
	21	51.6	7	0	0.0

Dis. Jup. III. Phot. R. Comp. with sat. III P. Obs.

6 56 20.1
23 41.1
7 20 1.2
~~7 0~~
20 1.2
2 21 51.6
2 41 52.8 approx. time eclipse.

~~2 24 59.5 111.4~~
~~25 15.5 214.3~~ Rej.

2 26 17.0 114.0 94.7
7 04 31 26 169 42 34.0 208.7
50.0 289.4 102.5
27 8.0 31.9 197.2 98.60
6440 3220 161.00

2 28 11.0 109.9 99.1
132 28.0 209.0
06 22 28 33 38.0 288.9
55.5 36.6 101.7 200.8 100.4
6384 3192 159.60

Jan. 10. 1881.

	07	13	2	29	24.0		107.6	101.6
		35			46.0	6367 31835	209.2	
07 40		47			59.0	15918	293.3	93.3
	08	07		30	18.0		26.6	194.9 97.45
	08	30		30	41.0		106.7	104.7
08m 50s		45			55.5	6427 32135	211.4	
		56		31	7.0	160.68	113.8	
—		11			22.0		210.8	97.0
					34.5		112.6	206.7 ~~108.75~~ 100.85 95.8
	09	48		1.16 1.206 236 32 59	57.0	6354 3177	208.4	
—					7.0	158.85	108.2	
					17.5		206.2	98.0
7h	10m	19s			27.5		113.0	96.9 138
		29			37.5		206.9	93.6
		57		33	5.5		113.6	
—	11	08			17.0		206.1	92.5
		23			32.0		119.7	
		35			44.0		205.3	85.6
		46			55.0		119.2	
—		54		34	3.0		205.9	86.7
	12	01			10.0		114.6	
		10			19.0		208.7	94.1
		21			29.5		113.8	
—		33			41.5		202.9	89.1

Jan. 10. 1881.

12	45	2	34	54.0	116.0	85.5
	58		35	7.0	201.5	
13	08			17.0	115.1	88.4
	19			28.0	203.5	
	33			42.5	126.0	71.5
	43			52.0	197.5	
	51			59.5	118.3	83.9
	59		36	8.0	202.2	
14	05			14.0	123.5	83.4
	10			19.0	206.9	
	16			25.0	121.0	~~4.4~~ 79.1
	22			31.0	200.5	
	31			40.0	126.8	68.7
	38			47.0	195.5	
	45			53.5	123.0	78.0
	50		37	0.5	201.0	
	56			6.0	116.2	82.8
15	04			13.5	199.0	
	10			20.5	116.3	86.7
	18			28.0	203.0	
	24			34.0	121.1	72.8
	29			39.0	193.9	
	36			46.0	124.0	71.0
	43			53.0	195.0	
	48			54.0	129.3	

			8	Jan. 10, 1881.		65.3
7	15	54	32	4,0	195,0	
		59		9,0	125,8	66.2
	16	05		15,0	192,0	
		12		21,5	126,0	69.6
		19		29,0	195,6	
		25		35,0	125,0	72.4
		32		42,0	197,4	
		38		48,0	127,0	65.8
		46	9	55,5	192,8	
		52	3~~8~~	1,5	122,5	67.1
		59		9,0	189,6	
	17	04		14,5	131,0	56.8
		09		19,0	187,8	
		15		25,0	132,3	61.9
		22		32,0	194,2	
		30		39,5	123,0	68.0
		36		46,0	191,0	
		40		50,5	130,8	52.9
		46	40	56,0	183,7	
		52	~~35~~	2,5	129,2	52.9
		59		9,0	182,1	
	18	04		14,0	104,3	53.6
		10		20,0	187,9	
		15		25,0	134,7	47.5
		21		31,0	182,2	

Jan. 10. 1881.

	26		35.5	134.4	
	30		40.0	146.6	52.2
	35		45.0	130.0	55.6
	40		49.5	185.6	
	43		53.0	129.6	54.1
	48		58.5	183.7	
	52	41	2.5	130.9	49.3
	58		6.5	183.2	
19	04		13.5	133.0	46.7
	08		18.0	180.7	
	12		22.5	134.5	46.3
	17		27.0	180.8	
	22		31.5	137.9	~~46~~ 46.6
	26		36.0	184.5	
	30		40.0	139.5	
	35		45.0	181.3	41.8
	40		49.5	130.2	
	44		54.5	179.5	46.7
	50		59.5	138.5	42.3
	54	42	4.0	180.6	
	58		8.0	142.8	37.0
20	04		13.5	179.8	
	09		19.0	137.7	43.1
	14		24.5	180.8	
	20		29.5	146.0	

Jan. 10. 1881.

	26		35.5	176.8	36.8
	29		39.0	145.4	29.8
	34		44.0	175.2	
	38		48.5	144.8	34.5
	43		53.0	179.3	
	48		57.5	145.7	31.3
20	51	43	2.5	177.0	
	57		8.5	144.0	33.2
21	03		14.5	177.2	
	09		19.5	146.2	30.3
	17		27.5	176.5	
	25		36.0	146.8	24.6
	33		43.5	171.4	
	40		51.0	150.0	
	45		55.5	[Suspected	
	55	44	6.5	Suspected]	

Limit of Vis.

		44	31.5	147.5	
		175	40.5	172.5	25.0
22	33	44 44	47.5	147.3	23.1
			55.0	170.4	48.1 24.05

33775
31885
159.42

much trouble from divergence of pencils.

Bond. 226.

2	50	56.5
	51	56.5

Bond 394

7	29	0.0
	36	0.0

Jan. 10, 1881.

7 25 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 1 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

Identification of star at
1^h 55.2 −24 58
2 57
1 2

3^h 9^m 55^s W. obs.
3 13 29

3 16 48 t δ −23°.2
1 26 h
1 51 α

3 24 5 t δ −24°.8
1 25 h
1 59

3 25 9 Two stars np & sf
3 26 15 Δα 1^m 6^s Δδ 0'.25

3 27 3.7 Two stars sp & nf
3 27 44.8 f star bright Δδ 10' Δα 41^s

3 28 35.4 Two stars sp & nf Δδ 30'
3 3 13.5

Jan. 10. 1881,
Reap. Jup. I. Phot, R. S. Obs.
Compared with sat II.

7	58	46.4	
	23	41.1	
8	22	27.5	
7	30	0.0	
	52	27.5	
2	51	56.5	
3	44	24.0	Approx. time eclipse.

Limit of Vis.

	3	40	0.0	126.4	
		179	41.0	200.4	74.0
8 18 25		40 45	58.0	139.4	45.2
			20.0	184.6	11 9 2 5 9.60

6508
3254
162.70

22 24	3	44	43.5	Suspected
27			47.0	seen.
32			52.0	142.9
41		45	1.0	178.4
45			6.5	138.9
51			11.5	186.2
59			19.5	137.6
05			26.0	190.2
10			31.0	130.8
16			37.0	186.7

Jan. 10. 1881.

23	21	45	42,5	124,9	64.4
	27		48,5	188,3	
	34		55,0	127,0	68.8
	40	46	1,0	195,8	
	47		8,0	124,2	
	54		15,0	196,6	72.4
24	05		26,0	119,7	79.3
	7		27,5	198,0	
	13		34,0	122,3	73.4
	21		41,5	195,7	
	27		48,5	124,2	66.9
	37		57,5	191,1	
	43	47	4,5	117,2	83.4
	51		12,0	200,6	
	59		20,0	112,3	87.2
25	07½		28,5	199,5	
	15		36,0	121,6	78.1
	22		43,0	199,7	
	31		51,5	118,2	87.4
	40	48	1,0	205,6	
	49		9,5	111,2	95.0
	55		16,0	206,2	
26	02		23,0	115,6	93.3
	11		32,0	208,9	
		1,0 1,20	41,0	109,1	97.6
26	34	48 2,21 55	50,0	206,7	
		49	0,5	105,5	104.5

631.3
315.65
157.82

2021
1010.5
505.2

Jan. 10. 1881.

						~~104.5~~
	3	49	9,5		210,0	
		16 3	21,0		115,7	
28 20		50 41	30,5		200,9	85.2
		50	47,0		117,0	
		51	4,0		199,3	82.3 87.5 83.75
			21,5	6329	117,2	
		16 8		3 1645		
29 21		51 42	32,5	158.22	193,9	76.7
			50,0		123,3	
		52	4,0		200,8	76.5 13 2 76.6
			24,5	6352	117,3	
		19 9	41,0	31760		84.1
		52 50		15880	201,4	
			59,5		117,2	
		53	14,0		193,8	76.6
				6297 31485 15742		1607 80.35

Light clouds passing.

Bond 236.			Bond 394		
3	57	7,0	8	35	0,0
	58	7,2		36	0,0

Jan. 10. 1881.

1 55

4 0

+2 5

~~24~~-25°.0

Cloudy.

-4 14

:2 7

2 7

Double H. C. 83.

4 19 +15.3

17

2

5 31

4 21

-1 10 -1,1

Jan. 10. 1881.

Reap. Jup. III. Phot. R. P. obs.
Compared with sat. II.

9 1 19.5
23 41.1

9 25 0.6
8 36 0.0

49 0.6
3 58 7.2

4 47 7.8 approx. time reap.

9 23 42	4	46	12.0	Suspected
55			25.0	121.8
24 06			36.0	190.7
17			47.0	113.5
24			53.5	190.0
31		47	1.0	114.0
37			7.0	126.0
45			15.0	116.2
49			19.0	190.8
56			26.0	185.3
25 06			36.0	126.8
14			44.0	114.0
19			49.0	192.7
26			56.0	117.6

Jan. 20. 1881.

25	33	4 48	4.0	188.8
		4 48	10ˢ Clouds.	
26	19 ~~21~~	48	50.5	107.5
27	30	49	1.0	195.3 →
	45		16.5	110.5
	55		26.0	194.0
	07		38.0	107.2
	17		48.0	196.2
	25		56.0	98.0
	34	50	5.0	203.0
	46		17.0	100.4
28	03		34.0	202.0
	11		42.0	114.9
	17		48.5	198.5
	27		57.5	107.2
	39	5-1	10.5	194.7
	51		21.5	104.7
29	09		39.5	202.4
	19		49.5	103.5
	25		56.5	203.2
	45	52	16.5	100.7
	57		28.0	199.2
30	09		40.5	107.3
	19		50.0	191.8
	35	53	6.5	108.0
	43		14.5	201.2

Jan. 10. 1881.

30 50 4 53 22.0 106.0
30 58 30.5 195.2 89.2
31 05 37.0 107.7
13 45.0 193.7 86.0
24 56.5 108.5
32 54 4.0 200.2 91.7
41 13.0 108.3
50 22.0 195.3 87.0
58 30.0 102.1
32 11 43.0 203.4 101.3
24 56.0 108.1
3ʰ 4° 34 55 6.5 204.5 96.4
46 18.0 103.0
54 25.5 204.5 101.5
197.9
98.95
49.48
33.0 6201 107.0
3 1005
1 55.02
44.0 197.6 90.6

56 2.0 Clouds.

On account of thick haze, settings difficult.

√ Haze becoming too thick – both satellites not visible simultaneously.

~~3.0 94.5~~

4 59 3.0 94.5

Clouds too thick to continue.

~~1 11.0~~

5 1 147 30.5 100.2

36 05 58 110 123 232 58 37 40.0 206.4 106.2
196.8
98.40

~~48.0~~ 6112
30560
152.80

2 53.0 95.7 108.1

Jan. 10. 1881.

		5	2	10.7 60 47 12	19.5		105.0
39	39				28.0		195.1
			2		37.0	5996 29980 149.90	106.0
40	15		2	19.4 48	45.0		194.9
					52.0		104.5
			3		0.5	6012 3006 150.30	195.8

90.1
19 8 2
9 9.10
88.9

91.3
18 0 2
90.10

Proximity of sat. I. disturbed the observations – all satellites near the limit of visibility during immersion.

Bond. 236.			Bond 394.		
5	10	19.0	9	48	0.0
	11	19.0		49	0.0
	12	19.0		50	0.0

Satellite suspected for some time (perhaps a minute) earlier than first observation, but haze and [illegible] satellite prevented its detection with certainty.

Jan. 12. 1881.

7^h 4^m δ Urs. Min. 1 β Urs. Min. W. obs.
δ " " 3 γ Cass.

Double H.C. 21,

0 18 −0.5
3 17
+3

Companion suspected at times on the south preceding side but not seen with certainty. Compan. ~~[illegible]~~ faint and moonlight rather strong. W. obs.

~~Double H.C. 93~~

~~5 32 −1.8~~
~~7 40~~
~~−5 2~~

Double H.C. 35,

0 28 +2.6
3 41
+3 13

This double found. W. obs.

t = 13 H 8 3.5

C. H. Circ. +3 18.5

Coarse Dec. C. + 2°.7

Fine H. Circ. 15^h 20^m +0.2 div.

" Dec. " + 2.3 div.

Pos. Ang. ~~25~~ 18°.5° dist. 2.5"

Mags. 9 & 10.8

86.3
67.8
18.5

Jan. 12. 1881.
Double H.C. 39.

0 40   −0°.8
4 6
+3 26

11 15 β Urs. Min. 1 α Urs. Min. } S. obs.
ε Urs. Maj. 1 α Urs. Min. } Faint clouds
α Urs. Min. 2 γ Cass. near.

~~H.C. 21 (Double)~~
~~0 18~~
~~2 27~~   −0 31
2 9

See next page

~~No star in the region appears double~~
~~Seeing bad. & some moonlight.~~

Jan 15. 1881.

6 0 Searched as Schj 273 dark red type IV a. P. obs.
23 39.2 +2 42′

Spectrum nearly continuous, but feeble in blue and violet. Dark band pretty certain between red and yellow; another between green and blue, very plain; a third between blue and violet. Green brightest at more refrangible end, just before the interruption. S. obs.

Band in orange plainer with low power; another suspected, less refrangible, and still another between the yellow and green. S. obs.

6 37 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 2 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

Double H.C. 21

S. obs.

0 18 −0 31
2 27
2 9

No star in the region appears double. Seeing bad; some moonlight

Jan. 15, 1881.

−0×46

0 39
2 36
1 57

Double H. C. 39

S. obs.

No double seen in this region except some very wide pairs

Double H. C. 41

0 43
2 50
2 7

+2 42

S. obs.

Not found

Returned to H. C. 39 –

0 39
2 57
2 18

S. obs.

The closest pair in this region has a dist. of about 40" to 50" the Mags. about 10 + 11 – Pos. Ang about 210° a 10th Mag. star is 4' south prec. principal component 2.5

a star of the ~~8.5~~ 8.5 mag. follows $3^m\ 23.^s5$ and will 5' north of the prin. compone

Place of 8.5 mag. star

$t = 3^h\ 14^m\ 11.5^s$

Coarse ~~Hour~~ = $2^h\ 33^m$

" Decl = $-0^\circ.4$

Jan 15, 1881

$t = 3^h\ 15^m\ 40^s$ Setting on Jupiter

Coarse Hour = $2^h\ 25.5^m$

" Decl + 3°.9

W. obs.

Double H. C. 44.

0 48 −1.1

3 24

+2 36

A double found.

$t = 3^h\ 32^m\ 48^s$ W. obs.

Coarse Hour = 2^h 54.5

" Decl. = +1.5

Pos. ang. 325° − dist. 25^s − Mag 7.8 + 9.2

Another double found − ~~possibly~~ probably # 44

$t = 3^h\ 39^m\ 21^s$

Coarse Hour Circ = $2^h\ 49^m$

" Decl. " = −1°.25′

Fine " " = + 3.4

" Hour " = $14^h\ 48^m$ + 2.8 div

Pos. ang. 300° − dist 35^s − Mags. 9.5 + 10 −

Double H. C. 50.

1 2 +1.2 W. obs.

3 44

+2 42 This double found

Jan. 15. 1881.

$t = 3^h\ 53^m\ 30^s$
Coarse Hour = 2h 52
" Decl. = +1.2
Fine Hour = 14h 52m +0.5 div.
" Decl. = +3.2 div.
Pos. ang. 255° - dist. 5" Mags. 9.5 + 10.8

Double H. C. 52

1 10 —15 10'
3 57 H. obs.
2 47

This double not found - field very bright.

Double H. C. 29 H. obs.

0 27 + 2.6'
4 10
3 43

Double suspected (star of right mag. found) but seeing too poor to separate so close a star.

Var. 8 Piscium
1 10 +8°.2
4 23
3 13 No peculiarity in spectrum.

Not identified with certainty.

Jan. 15, 1881.

R Piscium.

1 2 0 +2°.1
4 3 0
3 7

Star ¼ mag. ftr. precedes it and is 6' north — a star fol. ½' north ~~fai~~ which is faint (12 mag.) — another star fol. it 1 mag. ftr. and ½ mag. north.

1st. star.	36	56.2	Dec. 6
Var.		45.0	" 1.
12 mag.		52.0	" 2 ~~(2 mag)~~
1 ftr.	37	19.2	" 1½

Same again.

37	36.4
	45.2
	52.0
38	20.0

9 0 Fine banded spectrum prob. IV a. not certainly β
Color not marked.

9 05 Yellowish white inclining to red (Var) Notes.
Bluish white dark blue.
Comp. star 0.3 mags brighter

Jan. 15, 1881.

S Arietis

1 5 7 +11.8 P. obs.
4 4 6
2 4 9 Too faint.

T Arietis

2 4 0 +16.9
4 5 0 P. obs.
2 1 0

9 11 Color reddish — band suspected in
spectrum — north foll. star est.
1 mag brighter. P. obs

9 12 Color reddish - yellow - north foll.
star estimated at 1.5 - mag. brighter. W. obs
Faint dark bands suspected in more
refrangible half of spectrum. W. obs

o Ceti

2 12 −3.6
5 0
2 48

9 22 Color reddish · bands well seen perhaps
IV a P. obs.
Band in green perhaps brighter on more
26 refrangible side. S obs

Jan. 15, 1881.

~~Rath~~ Quite definite bands seemingly rather sharply defined but moonlight rather strong and sky cloudy.

W. obs.

Jan 17, 1881

Opened at 4 30 Adjusted pencils of Phot. S.

5 59 Polaris az. 165.6 P. obs.
alt. 175.3
Set 165.2 Began at 1 52

	Time		Alt.		Magn &c.	
47	1h 51.7m	18.7	245.7	+18.3	3	p. 2m
48	1 52.3	20.2	244.2	19.8	3	p 2m
	1 52.8		245.3	18.7	4	

5: 55 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 4 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

	Time		Alt.		Magn.		P. obs.
53	1h 54.5m	71.8	192.4	78.6	5		
	1 55.6		149.8	lt. 69.8	5		
51 53	1 56.2	10.8 11.9	275.6	−11.6	two 4		
	1 57.1		244.2	+19.8	5	11	1,11
	56		233.7	+30.3	4 d Lyra		
57	2 0	41.7	222.7	+41.3	3 m	3 m [illegible]	H. C.
0	3	(21.6)	242.8	+21.2	? m	? Singular	
0	3	22.9	241.6	+22.4	5 m		
	9		211.5	+52.5	2 m		

Stopped at 2 15.
Resumed at 2 30

31	2h 41m	20.7	285.3	−21.3	suspected 4th type, 6 magn.
36 37	2 45	−3.7 −3.1	268	−4.0	Two 4th mag stars susp.
				+2.30	4th Type
37	45	+2.7	261.7		4th mag star

Jan. 17, 1881

Region of double star H.C. 41. S. obs.

Reddish star, 8 magn.,

t $2^h\ 8^m.5$ α $0^h\ 40^m$

h $1\ 28.5$ δ $+2^\circ.6$

No double star found in region n f this star; seeing tolerable, moon not risen.

Region of H.C. 45

t $2^h\ 38^m.7$ ~~α~~ α $0^h.53^m$

h $1\ 45.5$ δ $-1^\circ.0$

Group of 3 stars ⁖ chief star perhaps 9.5 magn., companions 12 & 13. $\underline{p}$ est. 0°, 50°; $\underline{s}$ $35''$, $25''$.

$2^h\ 49^m\ 45^s$
48.5
51 25.5 37
52 59 33.5
53 25.5
26
55 3.5 37.5
56 37.5 34
3 7 0.5
21.5
36
57

This group is preceded $3^m\ 11^s.5$ by a 9 magn. in same δ and $3^m\ 11^s$ by a 9.5 magn. $4'.5$; also $1^m\ 34^s$ by a 9 magn. in same δ

S. obs.

t $3^h\ 7^m\ 30^s$ α $0^h.42^m$

h $2\ 26.5$ δ $-1^\circ.0$

In this place are 2 stars 9.5 to 10 magn., ~~the~~ n p and s f $\Delta\alpha\ 21^s$ $\Delta\delta\ 1'$. The following star has a faint companion p 120° s $30''$.

No other doubles seen in this region or to the south of it.

Jan. 17. 1881.

42 2^h 47^m 55.4 208.8 +55.8 4th Mag. P. obs.
48 Sweep
51 Sweep
53 ″
14 51 51 158.7 lc 14.1 59 2nd Mag. β Ursae Min
57 Sweep
57 300.6 -36.0 2 stars
59 Sweep
56 3 1 53.3 211.3 +53.3 3d Mag γ Persei
2 Sweep
2 3057.0 -40.4 4th Mag
? 3 206.6 58.0 3d ″
57 4 38.4 226.2 38.4 ~~37.8~~ 3d ″ 3d type ρ Persei
0 4 40.5 224.1 40.5 ~~39.7~~ 2d ″ β Persei
6 Sweep
– 8 206.9 +57.7 4th type H.C. 8
9 Sweep
– 11 206.8 +57.8 4th type H.C. 8
7 11 56.7 207.7 +56.9 5th Mag. prec 2^m
13 Sweep ended.

Limits 1 45 5 2 10 and 2 25 4 3 8

Stars repeated 1^h 56^m 30°.6 H.C. 14
2 0 +21°.6 ? 2 31 +21.4
2 37 -20.7 ? 2 39 -20.9
2 41 -3.6 ? 2 35.5 -3.7
– – 2 37.2 -3.8
3 0 57.3 H.C. 8

Jan. 17, 1881.

S Arietis P. obs.

1 57 + 11 49.7
3 32
1 35

t = 3^h 43^m 36.5^s 8th Mag. Δδ. 1
Supposed Variable follows & has
Δδ 6 - color yellowish
t = 3^h 44^m 29^s

R Ceti
2 18 — 0 50
3 48
1 30

Set on o Ceti

2 .12 −3 38
3 51
1 39

R Ceti
Bands not seen with certainty. P. obs.

Double H. C1 21.
~~0 1 8~~ W. obs.

0 18 −0.5
4 16
+3 58 Comp. suspected - but
not certainly seen - seeing poor.

Jan. 17, 1881.

4 35
1 55

2 40

$t = 4^h\ 43.5^m$

4^h 47 13
6 4~~2~~

4 1 57.~~1~~3 55

2 3.8

56 ~~0~~ $4^h\ 53^m\ 55^s$

4 54 9

2^h 56

~~51 13~~

1^h 58 9

$t = 4^h\ 57^m\ 20^s.2$
57 54.2

34^s

$t = 4^h\ 59^m\ 39^s.3$ transit
5 2 49

$t = 5^h\ 2^m\ 25^s.5$ 2nd trial.
4 33.5

Jan. 17, 1881.

Identification of 7th mag. star on Mer. Phot. sheet.

The 7th Mag., in question, found.

5^h 7 31.8
49.0 H. obs.

8 9.8
26

A star follows 7th Mag 16.5s + is 5.25' south Mag. of following star 8.5 to 9
Seeing bad - difficult to estimate magnitude

No other star in immediate vicinity.

5^h 12^m 30^s = time of transit of 7th mag. star
13 58.5 = " " " " star b.
Star b about 27' north of 7th mag.
Mag. of b 7.25 to 7.5

Call the 6.2 mag. star c — c fol. b 41^s + is 9.75' north — the difference in time between the 7th mag. + b, as well as the difference in decl., taken roughly in the finder.
d prec. b 56^s and is 5.25' north - Mag. of d 9±
e prec. b 33^s + is about 7' north. Mag 9.5 ±
f prec. b 34^s + is 8' north Mag. 9.25 ±

Jan. 17, 1881.
δ. Cancri.

8 36 +19.5
5 28
-3 8

Double H. C. 59.

1 18 +2°.4
5 31 H. obs.
+4 13

Companion not seen.

R Arietis.

Follows 6th mag. + is 1' north. F
interval 23s P. obs.

Bond 236			Bond 394.		
5	50	48.6	10	0	0.0
	51	48.7		1	0.0

Jan. 17. 1881.

Reap. Jup. I. Phot. H. S. Obs.
Compared with Sat. III.

9 54 34.9
23 41.1

10 18 16.0
10 1 0

17 16.0
5 51 48.7

6 9 4.7

Limit of Vcs.

6 11 5.0 Visible at this time in telescope but previously visible in finder.

Jupiter low and sky hazy - satellite not visible in Phot. H. until too late. Moisture and dust on eye lens.

Jan. ~~17~~ 18. 1881

6 mag. star.

6 9 +24.0
2 3 4
− 3 3 5

6 55 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 1 ε Urs. Maj.
α Urs. Min. 3 γ Cass.
Swifts' Comet. As chronograph failed, Prof. P. took time by Bond, 2 3 6. (See below.)

2 5 4
6 9
− 3 1 5

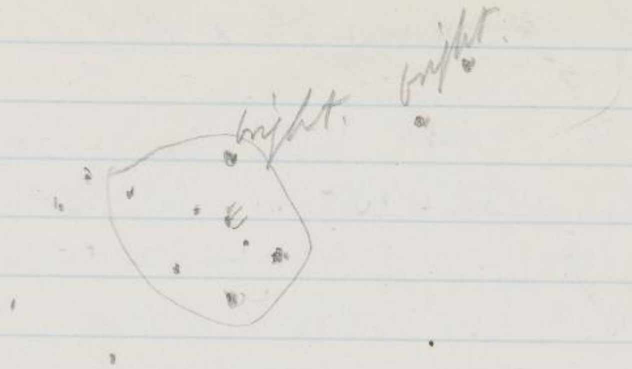
3
6 8
3 9
− 2 5 9

fol. 29s 10' south

8 15 4h Zero = $19\underset{4}{}2^{\circ}.2$ ~~197~~ Set at 237°.2
8 37.2 53.4 9 last.

		Star		Comet	
4	10	58.8	11 15.2	12 13.2	12 46.9
	13	11.2	27.8	27.1	0.0
	15	25.8	42.1	[31.4±]	wrong object
	17	35.5	51.9	49.9	25.6
	20	1.9	17.3	15.8	49.7
	22	5.0	20.8	19.6	53.4

Jan. 18, 1881.



Comp. star D.M. +25° No. 1174
Order – star, star, comet, comet,
Both in northern half of square. –
Mag. of Comp. star 8.2
7.6 follows 37^s 5.5 north ~~m~~ 9.1
precedes 16^s 8' north

Double H.C. 59

1 18 +2°.4
4 59
+3 41

5 9 ~~δ Cancri~~
1 18
+3 48
+3 51

A double found.

t = 5 12 34
Coarse H. Cir. $3^h\ 54^m$
Dec. +2°.1

Distance 40" – Pos. abt. 265°
mags. 8.5 to 9 and 12.5

Jan. 18. 1881.

9 mag. 0^s 3' south of
8.5 23.5 0'
7.5 59.8 4' south

Same again.

9 mag. 0 4' south
8.5 23.8 0'
7.5 61.3 6' south.

2 31 -20.7
5 22
2 51 Not found - prob. too low.

2 35 -3.7
5 27
2 52

9* 37 Spectrum examined - Not peculiar.

1 56 30.6
5 34
3 38

9 $t = 5^h\ 41^m\ 53^s$
Coarse Hour Circ. = $3^h\ 48^m$
" Decl " = 30.2

Jan 18 1881

1st wire 2nd Wire

a : 5h 43 54.0 Δδ 3
b : 44 15.3 Δδ 4
c - 57 5
d 45 2.4
f 13.

5h 46 5

					Mg
e	47	7	1st wire	δ 2	8
f	48	18	1 "	4	8½
g				redd.	

e	47	55	2d wire	
f	48	6	" "	
g		10	1st wire	9 8
	48	58	2 "	

Bands suspected in several adjacent preceding stars.
Examine region again

	R.A.		Dec.	RA	Dc	
ε	0^s	0^s	0′	0	0	30° .303
f	11	11	2′	10.7	2.8	.304
g	63	62	7′	62.0	7.2	.310

$1^h\ 49^m\ 44^s.1$ 30° 26′.0 7.0 Dc 30° 310

Jan 18. 1881

10 15 Examined spectrum of R Leporis
possibly IVa Secchi

Jan. 20, 1881

6 20 β Urs. Min. 2 α Urs. Min. S. obs.
α Urs. Min. 1 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

6 8 + 25.4
2 50
~~– 5 5~~
2 58

Comet – W. obs.

Pos. 0 307.7
45.0
352.7

Comp. star a – b prec. a 50^s and is 6' south of it. Mags. of a + b 9.5 –
a prec. c 32^s + is 5.55 south of it. Mag of c. 7.8 –
∴ Comp. star = D. M. +24° # 1200. Mag. 9.4
Order – Comet, Comet, Star, Star Comet in southern + star in northern half of square. Five complete sets – reject partial sets.
Use second series of five sets on sheet, – Reject first series. before "x" on sheet.
Last tap on last set close to rattle.

α Urs Min 3 greater than β Urs. Min
1 greater than γ Cassiop. P. obs.
α Urs. Maj 2 α Urs. Min.

Jan. 20. 1881.

Bond 236.

5	59	14.4
6	0	14.4
	1	
	2	14.7

Bond 394.

9	57	0.0
	58	0.0
	59	0.0
10	0	0.0

Reap. Jup. II. Phot. H. S. obs.
Jupiter II compared with sat. III.

10	0	2.1
	23	41.1
10	23	43.2
	0	0.0
	23	43.2
6	2	14.7
6	25	57.9

Jan. 20, 1886.

Limit of Vis.

			6	22 59.0	148.6	34.0
				23 12.0	114.6	
18/7	20	48		29.0	116.2	31.0
				48.5	147.2	
	23	04	25	38.5	Suspected.	
		08		42.5	Seen.	
		14		48.0	118.8	
		21		55.0	146.8	
		24		58.5	114.7	
		30	26	4.0	146.8	
		34		8.0	111.2	
		38		12.5	150.8	
		43		17.0	113.2	
		48		22.0	152.0	
		52		26.5	109.8	42.6
		57		31.0	157.1	
	24	01		35.0	109.6	47.5
		07		41.0	155.7	
		12		46.5	103.6	52.1
		18		52.5	155.5	
		24		57.5	103.7	51.8
		28	27	20.0	162.8	63.5
		35		9.0	99.3	

23 148
88
22

~~66~~
5266
2633
13 1.65

31.0
50
32.5
16.25

Jan. 20, 1881.

27 15,0 161,6 58.9
97 20,5 102,7
24 50 27 24 27,5 164,6 68.4
37,5 96,2 127.3
63.65
31.82
40,0 5251 162,4
26255
131.275 65.9
25 18 27 20 6 52 46,0 96,5
51,5 166,3
58,5 99,4 66.9
128
66.4
33.20
25 40 4946 165,4
2623 68.7
25 54 28 111 28 28,5 131.15 96,7
35,5 166,2
43,0 100,2 66.0
147
Steeple. 67.35
5285 33.68
26425
132.12

Bond 236. Bond 394.
6 31 19.5 29 0.0
32 19.6 10 30 0.0

The observations of the eclipse were interrupted by the disappearance of Jupiter behind the church steeple. The planet was growing rapidly fainter during the last three settings, and probably the last one ought to be rejected.

Jan 23, 1881.

Shutter frozen so that it cannot be raised without endangering chain.

7 10 Looked at S Cancri with B. Comet Seeker & 2 S Pols

10 15 S Cancri at least half or three quarters of a magnitude fainter than b Pols

Set for Swift's Comet.
6 14.5 +23.8 7.7 mag. Star.
7 15
+1 1

Comet not found. W. obs.
Region thoroughly identified, ~~and~~
Seeing very poor.

Jan. 24, 1881.

3 14
2 35
39

6 20 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 2 ε Urs. Maj.
α Urs. Min. 3 γ Cass

Fornax U. A. 83

Slightly reddish bands susp. P. obs.
Several narrow Bands suspected near the more refrangible ends. S. ob.

Two narrow yellow bands susp. [illegible] P.

Fornax U. A. 109

3 43
46
57

$t = 2^h\ 54^m\ 58^s$
Coarse Hour Circ. = -48^m
" Decl. " = 30°.6

ρ Fornacis identified. Star very slightly reddish; spectrum not peculiar. Nos 105, 106, 107, Fornacis (Uranometria Argentina) also examined; band suspected towards the less refrangible end of spectrum of No. 106. S. obs.

January 24, 1881

Pisces U. A. 28

7 0 Very slightly reddish - Spectrum not peculiar P. obs.

3 Same as P above. - S. obs.

Pisces U. A. 42

3	20	
23	40	+ 2 47
3	40	

7 8 Bands clearly seen. P. obs.

Wire a finder

10 Between two yellow bands; more refrangible ends of green; More refrangible ends of blue; ~~Edge of blue~~ Indigo bands;

Wire b finder

17.0	22.1
21.3	27.3
30.1	35.0
36.7	41.3
38.2	44.8 (somewhat uncertain)
47.9	53.2

Jan. 24, 1881.

14.3	0.0	0.0	0.0
19.4	4.3	5.2	5.1
27.2	13.1	12.9	12.9
34.0	19.7	19.2	19.7
37.0	21.2	22.7	22.7
45.3	30.9	31.1	31.0

7 1.- Color very red. P. obs

Pisces. U. A. 49

+ 2 14

7 21 Very slightly reddish - Spectrum not peculiar — P. obs.

Pisces, U. A. 59

− 6.7

7 26 Color white - bands seen in yellow. P. obs
Reddish; one minimum of light in red, one in orange. S. obs. Spectrum not entirely interrupted anywhere.

Pisces U. A. 63

26 Color white - Spectrum not peculiar. P. obs
Color white, spectrum not peculiar. S. obs.

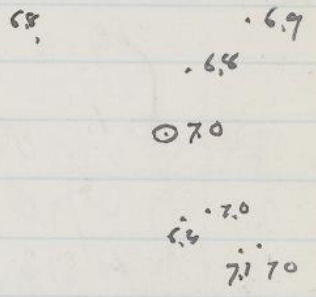
Pisces, U. A. 81

~~Focus 62.8 S. obs~~ + 7.5

7 38 Color nearly white - Spec. not peculiar P. obs

January 24, 1881

Pisces U. A. 80 -



0 14
3 1

47

7 5.5 Spectrum probably banded Star very faint - probably variable P. ch

A star precedes 2' north, 1/2 mag. fainter.
A " follows 20' north, 1/2 mag. brighter.

$4^h\ 15^m\ 24^s$ $4^h\ 16^m\ 4^s$ (Variable)
$16^m\ 39^s.5$ (brighter star)

$t = 4^h\ 17^m\ 34^s.5$
1 mag ~~btr~~
Coarse Decl Circ 3.4
" Hour " $4^h\ 7^m$
~~1 mag btr~~
t = 4 18 36 1 mag btr
Coarse Decl Circ = 2.8
" Hour " = $4^h\ 7^m$

t = 4 19 28
Red star
Coarse Decl = 2°.3
" Hour = $4^h\ 5^m$

January 24, 1881.

Pisces U.A. 96

4 21

0 41 +4.6

3 40

8 6 Color nearly white - Spec. not peculiar. Pol

ι Ceti

1st wire in finder ~~of~~ 32 27.5

Of the limit of spectrum ~~and~~ 32.8

mid. of broad band in yellow. 36.5

" " band in green. Rej. 40.2

mid. of 3d Band in blue. 44.4

2d " wire. 49.0

Same again. 33 17.3

22,0

26,4

29,6

33,0

48,6

Same again. 34 30,4

35,5

40,2

43,0

47,0

35 1,6

Jan. 24. 1881.
Same again.

35 33.0
37.6
42.0
45.4
49.4
36 4.4

Swift's Comet.

6 13.5 +24.0
4 40.
-1 33

~~4~~ 6 13.5
4 50
1 23

5h 40 3.2
1 44
41 47

Jan. 24, 1881.

Sweeping on ~~W~~ East Balcony with
Bowditch Comet Seeper P. obs.

Alt.	Azimuth
174.3	172.3

~~6 10~~ ~~Set at~~ 173.0

1st Sweep at 6h 11m 0s.

9	6h	14m	50s	4th Mag.	205.3	+59.2	59°.1 2 Lyn
		16	0	4th "	147.0 lc	+67.0	
		16	25	Sweep			
		20	20	Sweep			
			43	4th Mag.	294.6	-30!	
		21	22	3d "	282.3	17.8	
16		23	0	2nd " 3d type	241.8	+22.7	μ Gemin. 22.6
		25	25	Sweep	~~x~~		
22		27	20	3d mag	244.2	+20.3	ν Gemin. 20.3
		29	5	Sweep			
		31	30	4th type	225.9	+38.6	6th Mag.
6h (28.)m		33	0	Sweep			
31		35	15	2nd Mag.	247.0	+16.5	γ Gem 16.5
		36	15	6th Mag.	225.7	+38.8	4th type
		38	0	Sweep			
		39	2	Light from Sirius			
		~~[illegible]~~	45	~~4~~ 7th Mag.	268.8	~~[illegible]~~ -4.3	4th type Susp.
		42	18	Sweep			
41 h	41	43	25		285.1	-20.6	Cluster 20.6 α Can Maj
6	40		50	Sirius -16.5	281.0	-16.5	
		46	30	Sweep			
		47	20	Sirius on edge of field.			
		50	8	Sweep ended —			

January 24. 1881.

Double H C. 66

1 48 — 2.7
6 12
4 24 Too Low

Double H. C. 83

4 19 + 15.3
6 13
1 54

t = 6h 25m 23s Hvols
H.A. 2 7 ~~t~~
Bright double suspected, not certain
This star ~~7~~ to 7.5 mag. S

Double H. C. 89.

5 23 — 23.7
6 2~~8~~
1 6

6 53
5 23
1 30

6 49
5 23
1 26

6 42
5 23
1 19

A double found —

January 24, 1881

$t = 6^h\ 43^m\ 45$
Hour Circ {Coarse} $1^h\ 17^m$
Decl " " -23.2
" " {Fine} $+1.9$ div
Hour " " $13^h\ 16^m + 2.9$ div.
Pos. Ang. 0 dist-20^s Mag 8.7 + 10

Suspected double
~~Coarse Hour Circ 56 =~~. $t = 6^h\ 56^m\ 2.0^m$
" ~~Decl~~. Coarse Hour = $1^h\ 30^m$
~~Fine~~ " Decl = $+ 23.85°$
Fine " = $+ 5.1$
" ~~Hour~~ = $+13^h\ 30^m + 1.9$ div
Pos Ang 250 dist-.4 Mags ~~9.0 +~~ 11 + 8.9

Setting on Rigel

$t = 7^h\ 0^m\ 24.3^s$

Coarse Hour = $1^h\ 52$
" Decl = -8.45
Fine " = $+2.2$
" Hour = $13^h\ 52 + 0.2$ div.

Jan. 24, 1881.

Comet

$$\begin{array}{r} 6\ \ 13 \\ 7\ \ \ \ 3 \\ \hline 50 \end{array}$$

$$\begin{array}{r} 7\ \ 47 \\ 6\ \ 13 \\ \hline 1\ \ 34 \end{array} \qquad \begin{array}{r} 8\ \ 30 \\ 6\ \ 13 \\ \hline 2\ \ 17 \end{array}$$

Region thoroughly examined but comet not found.
Sky a little hazy. and seeing growing poorer. W. obs.

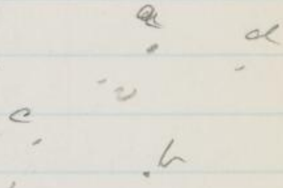
Jan 25, 1881

α Ceti Type III Color 3 P. obs.
ρ^2 Eridani; spectrum not peculiar; color 1. S. obs.

6 50 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 2 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

ρ^2 Eridani; spectrum not peculiar; color 1. P. obs.
Eridani Nos 91, 94, 96 of the Uranometria Arg.
No. 96 relatively faint. v ? variable

7 14 v = .5 c a
v = .3 d b (nearer to d.) P. obs.



Mag. b 5.5 v 6.7 d 6.9 } S. obs.
a 6.0 c 7.0 }

In the above comparisons, a is No. 91 of the Uran. Arg. b is No. 94, v No. 96; c and d are stars visible readily with the opera-glass with which the comparisons were made.

No. 91 is, at most color 1; spectrum not peculiar. P. and S. obs.

Jan. 25. 1881.

6 13.5 +24.0
5 10
−1 3.5

Swifts Comet

6 16 27 +23° 46′
−1 31
6 14 56

6^h 43^m Star found of 4th type P. obs.
3 minutes east of meridian Δδ+3.2

6^h
9½ mag. Δδ 9; 47^m 47^s a 26 26.5 P .87 obs
8 " 1; 48 13 b 78 78.6
9 " 8 49 31 c
4th type 8.5 50 10 d 39 37.7
Hour ang = 11^m
Decl = 3.°1

True star of fourth type precedes supposed star and is 9′ north.

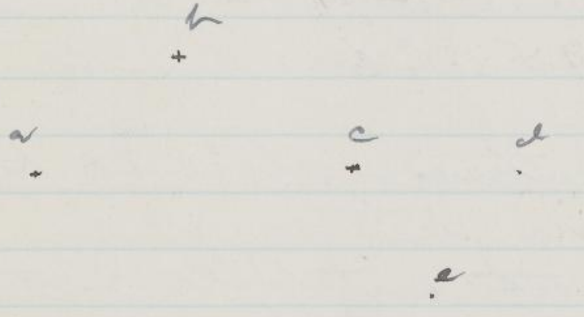
Jan. 25. 1881.

		dec. 16	7^m		$13.\hat{2}$
c	8 mag.	" −2		7.28	8.4
e	4th " type	" 9			37.7
d	Sup. " "	− 11		8	6.3

Square not set exactly right.

Spectrum of star [illegible] IV a
est mag 10 Clear 4

Looked again for Swifts' Comet.
A thorough search made.
Stars rather dull and seeing not very good.
Comet not found. W. Obs.



a =	+3°.1365	8.7								
b =	+3° 1371	7.0								
c =	+3° 1379	7.6	6^h	36^m	49.5^s	+3° 17.2'	36^m	59^s	3°	29.2'
d	+3° 1384	9.2		37	27.2	18.3	36	59^s		28.3

DM. + 3° 1379 = Weisse VI 1118; place for 1880 $6^h\,38^m\,8^s$ +3° 15.8'
Resulting place of star c 6 38 17 +3 26.8'

Jan. 26. 1886

Bond. 236.			Bond 394.		
2	29	32.0	6	5	0.0
	30	32.0		6	0.0

Reap. Jup. I. Phot. R. P. Obs.

6 19 18.3
23 41.1
6 42 59.4
~~30 32.0~~
6 0.0
~~6~~ 36 59.4
2 30 32.0
3 7 31.4 approx. time eclipse.

C. M. T.

6 43 53 3 8 46.0 Suspected
6 43 57 49.5 Seen.

Moderately thick clouds passing Jupiter seen in telescope. Comparison ~~st~~ satellite not seen for most of the time.

Bond. 236.			Bond 394.		
3	14	39.0	6	50	0.0
	15	39.1		51	0.0

Jan. 26. 1881,

Double H.C. V 9,

1   18   +2,4   W. obs.
4   30
+3   12

Cloudy.

Jan. 27. 1881.

7h 04m δ Urs. min. 2 β Urs. min. W. Obs.
δ Urs. min. 2 γ Cass.

4h 20m = 7h 52m

Hazy Star.

0 43 +2.7
4 3 ~~8~~
~~+4 +6~~
~~+4 2 8~~
+3 48

4 36
3 53
0 43

t = 4 58 25.5
C. H.C. 4h 17.5m
C. Dec. +3.0
True H.C. 16h 18m +0.2 div.
" Dec. +2.8 div.
Pos. 270. dist. 5"
Mags. 11.5 + 12.

Spectrum probably stellar – at times, however, doubtful. Considerably off the meridian. Looks a little hazy in second power eye piece.
W. obs.

Jan. 27. 1881.

Setting on Jupiter

t= 5^h 5^m 58.5

C.H.C. = 4^h 12^m

C.Dec.C. = + 4.2

Fine H.C. 16^h 12^m 0.2 div.

" Dec.C. +1.2 div.

Swifts' Comet.

6 13. +24.0 W. S.

8 47

+2 34

Comet not found.

Jan. 28, 1881

[illegible]

6 15 No. 1~~1~~4 124 Eridani (U.A.) P. obs.
Color 2 ; spectrum not peculiar
Star low ; definition very poor ; object-
glass partly behind shutter.

6 22 No 127. Color 2 Type III. ~~S~~ P. obs
Color 2 Dark bands in orange
and between yellow and green. S. obs.

No. 158 Color 2 γ Erid. III [illegible]} P. obs
Star precedes with bands.

No. 158 γ Eridani. Color 2. Decidedly type III ;
that is, many minima of light in the
spectrum, apparently due to groups of lines.
The preceding star seems to have some dark
bands towards the red. S. obs.

Preceding star is 6′ south of γ Erid.
Δα by Stopwatch $1^m\ 33\frac{1}{2}^s$ 93.5
3 6 92.5
Mean $93^s.0$

6 50 Color of prec. star 2 ; magn. 7. S. obs.
Color 2 P. obs.

~~No. 183.~~

Jan. 28, 1881

Jan 28. 1881

6 55 No 183 Color 1 Spectrum not pec. P. obs.
Color 1 Spectrum not peculiar S. Obs.

6 58 No 184 Color 0 Spec. not pec. P. obs.
Color 1 Spectrum not peculiar S. obs.

7 03 211 Color 1 Spect. not pec. P.
231 " 1 " " " P.

291 Color 2. Spectrum not peculiar. S. obs,
It has a star n p it nearly as bright.
231 Color 2. Spectrum not peculiar; some
lines suspected. S. obs.

Hazy Star. = Double H.C. # 41.

0h 43m +2°.7
3 ~~57~~
+3 ~~2~~
14

7 10 β Urs. Min. 1 α Urs. Min. S. obs.
α Urs. Min. 1 ~~α~~ ε Urs. Maj.
α Urs. Min. 3 γ Cass.

5s Δα 26s
31s.

Examined region of hazy star H.C. 41;
identified DM. +2° 104, 105, 114. Hazy star
perhaps ~~not~~ seen; seeing very bad. W. obs.

January 28, 1881

U. a. Eridani. 231.

4 25 R.A.
4 22
3 +0.3 W. obs.

7 v 8 Some lines seen. Spectrum not peculiar. W obs

~~4 28~~
~~2 41 8.5~~
~~1 47~~

~~U. A. Eridanus 241~~

~~4 35~~
~~4 28~~ 8.5
~~7~~

~~8 10 Some lines seen spec. not peculiar - W. obs.~~

U. a. Eridani 241
8 19 Spec not peculiar W obs.

U. a. Erid. 242
8 19 Spec not peculiar W obs

U a Erid. 231
4 53 0.18
4 25

January 28, 1881.

~~2 5 9~~ U. a. Erid. 259

4 55
4 35 —19.9

20

8 27 Seems to be a bright band in green. Wols
28 Color 1 Spec. not peculiar P. ols

U. a. Eridani 271

5 14
4 42 16.5

32

8 50 Color 0 Spec not peculiar P ols

U a Erid. 274

8 50 Color 0 Spec. not peculiar P. ols

U. a. Cumulus 6.9

8 52 Spec not peculiar P. ols

U a Erid. 278

5 33
4 49 5.6

44

9 5 All bright stars in vicinity examined
Color 1 Spec not peculiar P ols

Eridani 277

5 3
4 47

9 7 Color 1 Spec. not peculiar P ols

January 28, 1881
U. A. Erid. 285

5 40
4 55
45

9 10 Color 0 Spec. not peculiar. P. obs

284

4 54
5 45
5 1
5.9

9 27 Color 2 Spec not pec. P. obs
30 Color 1 " " " S. obs

S. finds a perceptible difference between Nos. 284 and 286 in regard to the appearance of the spectra; the red is more conspicuous in 284 and the blue in 286. P. does not confirm this.

Orion. No. 4 U. A.

9 35 Color 1 Spect not pec. P.
Color 1 Spectrum not pec. S.

Orion No. 11.

9 39 Color 2 III type P
Color 2 Maxima of light in red orange and yellow. S. obs.

Jan. 28, 1881

Orion No. 15

9 44 Color 1 Spect not pec. P obs
" 2 " not pec. S. obs.

Orion No 22

9 57 Color 2 S not pec P obs
Color 1 S not pec. S. obs.

Orion No. 27

9 59 Color 0 S not pec. P obs
58 Color 1 " " S. obs

Orion 32

Color 3 Marked bands
Type IV a but red seems more marked.
10 03 Striking object to be examined again. P obs

40

10 06 Color 0 Spect not pec. P

46 P

10 09 Color 0 Spect not pec. P

51

10 11 Color 0 Spect not pec. possibly type III P.

67

10 17 Color 0 Spect not peculiar P obs

~~81~~ 66

Color. 0 spect. not peculiar W. obs.

67

Color 2, spect. not peculiar W. obs.

Jan. 28. 1881.

81
Color 2 bands suspected ? III
10 25 doubtful P. obs

~~Co~~ 81
Color 2. Not peculiar. W. obs.

Jan. 29, 1881

6 25 β Urs. Min. 2 α Urs. Min. S. obs.
α Urs. Min. 1 ε Urs. Maj.
α Urs. Min. 3 γ Cass.

[illegible] low power eyepiece.

Stars from Uranometria Argentina
Eridanus. No 216.

Color 2. Spectrum not peculiar. S. obs.
Red part of spectrum relatively long, blue short. Slight appearance of maxima near red end.

No. 263

6 48 Color 1. Spectrum not peculiar. S. obs.
" ②. " not peculiar P. obs.

No. 279.

6 52 Color 1 Spect not peculiar. P. obs
57 " 2 Spect not seen S. obs.
except that blue is short.

No 278

6 52 Color 2 Spect not peculiar. P. obs
Color 1 Spect. not peculiar. S. obs

Lepus. No. 4 (R Leporis).

7 01 Color 4 Approximately IVa. P. obs.
Color 4 Blue very feeble, but not seen separated from green. Minimum between yellow and green, with maximum in yellow close to it. S. obs.

Jan 29, 1881.

U. A. R Leporis

7 15 Color at first - estimated at 2 & seems redder on farther looking W. obs.
~~Spec.~~ Red end of Spec. intensely red.
Yellow bright then a darkish band – then brighter suddenly cut ~~W. obs~~ off. but with a little feeble light beyond. W. obs.

β Leporis 6

7 20 Color 2 - Spec. not peculiar P. obs
21 " 2 Spec not peculiar W

7 23± Color. 3. Spectrum not peculiar. P. obs.
24± Color. 3. Spectrum not peculiar. W. obs.

Cluster. H 1112.

7 30 Spectrum Contin P. obs.

Lepus 23

7 39 Color 0 Spec. not peculiar P obs
41 Spec. not peculiar - dark lines suspected - W obs
Color 2 W. obs.

U A. Lepus 34

7 44 Color 2 : Spec not peculiar P obs
4 – " 1 " " " W. obs

January 29, 1881.

U.A. Lepus 66

7 47 Color 1 - Spec. not peculiar P. obs
48 " 2 " " " W. obs

U.A. Lepus 74

4 22

7 51 Color 3 Spec. not peculiar P. obs.
52 " 2 " " " W. "

U.A. Lepus 84

5 58
4 27
1 31

7 55 Color 3 P. obs.
56 " 1 Spec. not peculiar W. obs.

Lepus 91

7 57 Color 2 bands type 3 P. obs.
58 Color 1 Bands W. obs

Lepus 92

6 2
4 36
1 26

8 4 Color 2 Bands type 3 P. obs
5 " 2 Spec. not peculiar. Later Bands suspected at more refrangible ends. W obs

January 29, 1881.

Lepus 96 U.A.

8 8 Color 1 - Spec not peculiar P. obs
9 " 2 " " " W obs

Lepus 97 U.A.

8 11 Color 1 - Spec. not peculiar P. obs.
13 " 1 - Bands suspected W. obs.

Lepus 100

8 15 Color 1 - Spec. not peculiar P. obs
16 " 1 - " " " W. obs

U.A. Tauri 3

4 54
3 18
1 36

8 17 Color 1 - Spec. not peculiar P. obs

January 29, 1881

~~Lepus~~
~~4 56~~
3 55
1 1

Tauri 26 U. a.

8 27 Color 0 Spec. not peculiar P. ob

5 2
4 7
55

Tauri 42

8 32 Color 1 Spec. not peculiar P. ob

Tauri 43

8 34 Color 0 - Spec. not peculiar P. ob

Orion 68 U. a.

8 50 Color 0. Spec. not peculiar P. ob

Orion 79

8 53 Color 2 Spec. not peculiar P. ob

Orion 81

8 54 Color 2 Spectrum not peculiar - though bands sometimes suspected P. ob

January 29, 1881.

Orion 132, U.A.

5 36
5 33

8 58 Color 2. Spec. not peculiar. P. obs

5 3 5
5 27   −1.5
8

Orion 96 U.A.

9 6 Color 3 Spec not peculiar P. obs.
8 " 2 " " " W. obs

Orion 32 U.A.

52
5 45
4 59   +1.0
4 6
5 3

9 25 Color 3 S. obs
25 " 3 W. obs

January 31, 1881.

At $3^h 9^m$ Red Star $3^h 6.5^m$ W. of Mer.
Decl $62^\circ.3$

6 32 3 Clar. S not pec. P. obs
3 " Sp. not pec. S. obs.

t $3^h 21^m$ α Cassiop.
h 2 48 δ 56°.0
α 0 33 Circles seem nearly right.

At $3^h 31^m$ 6 my. at $3^h 33^m$ ~~Set~~ H.A. 63°.8

6 At 3^h 35 α Cass is $3^h 2^m.5$ 56°.0

12	41	49	20
47	42	9	32
35	43	41	
	44	8	

$3^h 48^m 45^s$ Sweeps P. obs.
Alt. of Pole Star 175.6 Azamuth ~~174~~ 174.2
Set at 173.8
Abandoned for Haze

New Red Star.
$t = 4^h 4^m 29^s$ S. obs.
Coarse Hour Circ = $4^h 12^m.5$
" Decl " 62.7
Fine Decl " +4.1
" Hour " $16^h 12^m$ +0.9

January 31, 1881

K Cassiop.

$t = 4^h\ 7^m\ 4.5^s$ S. ch.

Coarse Hour = $3^h\ 52^m$

〃 Decl = 62.5

Fine 〃 + 3.1 div.

〃 Hour 15^h 42 + 1.2 div

$$\begin{array}{rrr} 4 & 7 & 4.5 \\ 3 & 52 & \\ \hline 0 & 15 & 4.5 \end{array}$$

$$\left(\begin{array}{lrrr} & \overset{4}{15} & \overset{7}{42} & \overset{4.5}{48} \\ \hline a.R = & 0 & 2\ 4 & 16.5 \\ & & & \\ 62^\circ & 15.5 & & \end{array} \right)$$

$$\begin{array}{r} 62.1 \\ 62.5 \\ \hline -.4 \end{array}$$

$$\begin{array}{rrr} 4 & 4 & 29 \\ 4 & 12 & 30 \\ \hline & -8 & \cancel{16} \\ & & 1 \\ & -8 & 1 \end{array}$$

$$\begin{array}{r} 62.7 \\ .4 \\ \hline 62.3 \end{array}$$

23 51 59

$$\begin{array}{rrr} t=4 & 18 & 37 \\ 4 & 19 & 30 \\ \hline & - & 53 \end{array}$$

= 6 mag. star.
+63.8   63.4

$$\begin{array}{rrr} t=4 & 19 & 51 \\ H.A=4 & 23 & 00 \\ \hline & -3 & 9 \end{array}$$

7th mag. star.
+63.4

63.0

$$\begin{array}{rrr} 23 & 56 & 51 \\ & 58 & 34 \\ \hline & 1 & 43 \end{array}$$

Jan. 31. 1881.

Red Star (place.)

t = 4h 20m 58s
H.A. = 4 28 5 +62°.6

-7 2

23 52 58

~~15~~3 42 48
~~3 5 2~~

4 7 4.5

~~3 5~~

R.A. 0 14 16

23 59 7
23 58 58

New Red Star. = D.M. +62° 2343.

4 27 23 +21′
27 45.5 9′
29 13.2 23′
29 43.5 19′
31 13.0 19′

0 24 16.5
45.
31.5

3 5 0
52 25
56 15

4 4 29
4 12 3.6
~~25.4~~
~~7 34.6~~

7.8
15.5
-7.7

New Red Star.

R.A. = 23 52 25.4

Dec. 62° 20.′5
7.7
62 12.8

23 52 25.4
31.5
23 52 56.9

Jan. 31. 1881.

0 2 37 +63.2
4 36
~~4 33~~
4 37

2 3 58
4 43
4 45

Birmingham 1

8 7/ Color 2 Spec. not peculiar P. obs.
/11 " 2 Bands suspected W. do

Feb 2, 1886

0 13 43.9
3 20
3h 07

7h = 3 52

2d Star in list R33,149

6 30 Color 4 S not peculiar but red very marked blue faint. P. obs.

6 40 Color. 3 Spectr. not peculiar; blue rather faint.

Spect. Posit. Comet Seeker P. obs.

3 55 Pole Star at Alt. 1793 A 179.0

58 Began at

4h 4m 45s 3d Sweep

7 4 5 4th Mag. 238.4 +26.3 26.1

53 7 3d " 224.2 +40.5 40.2

8 42 6 3d " 216.3 +48.4 48.1

9 47 Prob. 4th Sweep

11 9 7 3d Mag. 256.2 +8.5 8.9

41 Suspected singular spec 250.4 +14.3

12 10 5th Mag. 249.6 fol. prec. 2m +15.1

14 18 3d " 146.7 +62.0 Ce

31 Sweep

16 2 16 3d mag. 248.2 +16.5

17 47 Sweep

55 4th Mag. 298.7 -34.0

21 35 3d " 146.3 +61.6 Ce.

45 Sweep

See next page.

Feb. 2, 1881.

7, 25 β Urs. Min. 2 α Urs. Min. J. R.
, α Urs. Min. = ε Urs. Maj.;
, α Urs. Min. 2 γ Cass.

Sweeping continued — P. obs.

4h 24m 40s Sweep
27 40 "
29 29 52 29 1st Mag 248.4 +16.3 α Tauri.
32 19 Sweep
43 4th Mag 295.6, −31.1 Two fainter stars [follow.
35 38 Wind becoming troublesome.
36 5 Sweep
40 0 5th Mag 277.3 −12.6 bands susp.
39 about] Sweep
~~42~~ 20 6th Mag 201.1 +53.6 bands susp. brighter stars fol.
42 50 42 4th Mag 198.5 +66.2 66!
~~44~~ 43 22 ~~6~~ th Mag 196.6 +68.1 4th type fol. by another star of = brightness
" 44 20 Sweep
45 30 Cluster 254.0 +10.7
47 32 Closed.

3h 57m to 4h 46m

Feb. 2. 1881

β236			β394	
5 8	05.		17	0.0
9	05.4		18	0.0
16	5.8.	8	20	0.0
	6.0 W.			

P

Reap. Jupiter I. Phot. R. P. Ob.
Compared with nearest fol. satellite

8 14 57.8 Comp. with Sat III.
23 41.1
8 38 38.9
20 6.0
18 38.9
5 16 5.8
5 29 44.7

8 39 04	30	28.0		
10		34.0	107.0	
15		39.0	132.0	25.0
20		44.5	116.8	
26		49.5	133.0	.2
32		56.0	105.9	
38	31	2.0	138.2	
43		7.0	102.0	
48		12.5	137.4	

Feb. 2. 1881.

8	39	58			21.5		99.3	
	40	4			27.5		138.1	
		10			34.5		98.0	
		16			40.5		139.7	
		28			51.5		95.0	
		3~~6~~5	5	32	0.0		144.2	
		4~~4~~3			8.0		95.7	
		53			17.5		142.2	
	41	01			26.0		91.7	
		8			33.0		143.6	51.9
		15			40.0		89.5	
		25			50.0		144.4	54.9
		31			56.5		90.2	
		36		33	1.0		145.5	58.3
		47			11.5		88.2	
		59			24.0		151.4	63.2
	42	12			37.0		87.2	64.6
		23			48.0		151.8	
		~~47~~		3.4	11.5		88.0	
		~~58~~		65	23.0	48 13	151.0	63.0
		6		120 185 35	11.0	240 65 120.32	86.5	
	43	21		34 46	19.5		155.8	69.3 66.15
				37	15.0		85.0	71.3
				188	26.0	48 26	156.3	
	46	09		37 34	41.0	2413 120.65	89.1	63.1
					56.0		152.2	134 4 67 20 ~~33.60~~

Feb. 2, 1881.

5 38 13.5 155.9 64.3

s
47m 15 158
38 40 30.5 150.2

49.0 476.1
2 380.5
119.02 84.7 70.6

39 5.0 155.3 134 9
67.45

Comps. of Sat. III and star following.
Sat. III disappears between 3d & 4th reading

5h 54m 80.6
5 4 30 146.8 66.2
5 5 261.3 66.9 P obs
9h 04m 5 6 328.2 133.1 2.9
19
55
33.28

Images reversed by turning position circle

5h 57m 76.4
59 155.8 79.4
59 30 262.4
6h 0 329.4 67.0 P obs.
9h 08m 35
59 146.4 2.6
36.6

Pos. Ang. of Star 270 — dist. 2

6h 1m Star disappears at about 15° P. obs

6h 5m 80.5 W. obs
5m 30s 155.8 75.3
7 263.0 2.6
7 30 333.7 70.7
146.0
36.5
9 15m 25
6

Feb. 2, 1881.

6^h 8^m 30^s 84.8 W. obs.
9 142.1 57.3
9 30 265.6 63.9
9 30 329.5 121.2 3.2
9^h 18^m 9
30.3

Pos. Circ. at 318.8
180.0
138.8

6^h 12^m 30^s 57.5 W. obs
13 30 176.7 119.2
13 30 236.1 116.7
14 352.8 235.9
9 22^m 13½
13
3.1
124.1
31.02

6^h 15^m 62.8 W. obs
15 174.2 111.4
Seeing very bad - images blurring
24 16 238.2
16 30 344.8 106.6
218.0 2.7
142.0
35.5

Readings commenced in same position of circle. W. Ob.

6^h 26^m 58.5
27 167.3 108.8
28 245.3
28 354.2 108.9
29 217.7 2.7
27
142.3
35.58

9 36

Feb. 2. 1881.

6	29	59.4		S. Obs.
	29	168.9	109.5	
	30	232.3		
9^{38}	30	359.0	126.7	
			236.2	
				3.1
			123.8	
			30.95	

About 130.

Let at. $\frac{180}{310^\circ}$ for next readings

6 Steeple interferes.

Feb. 4. 1881.

List of red stars; Book R33, p. 149
Star No. 7 ($2^h\ 0^m\ 37^s$)
7 0 Color 2; spectrum not peculiar S. obs.
" 2; " " " P. obs.

7 10 S Cancri & star preceding

$t = 4^h\ 9^m\ 0.5^s$

Star dec. 9 Mag. 9.

S Cancri
Δ δ 8 mag
$t = 4^h\ 9^m\ 51.3^s$

Δ δ 8
$t = 4^h\ 11^m\ 41.5^s$

$$\begin{array}{rr} 6 & 3 \\ 4 & 54 \\ \hline 1 & 9 \end{array}$$

Feb. 4, 1881

Star at 6h 18m 37s +14° 47

6 18 +14.8
5 5 5
1 2 3

5 0
~~7~~ ~~8~~
8 2 Color 3 Pols
Spec $\overline{\text{IV}}$ a 1.

5 2 25
1 16
~~3~~ ~~4~~ 6
6 18

Star at 6h 2m 49s +26° 3'
6 3
5 6 +26.0
57

8 27 α = β Urs Min
α 2 brighter than β Urs. Maj. P. Ols

Photometer S' and S Cancri
Star 9.0 too near

Feb. 4, 1881.

~~Bands~~ Spectrum of Various Stars in ~~Praes~~ saepe
Praesaepae. P. Ns. Bands not seen in any.

Double ~~H. C.~~ B 82. W. obs.

$4^h\ 1^m \quad -16.^\circ2$

$\underline{6 \quad 23}$

$+2 \quad 22$

$4 \quad 1$

$\underline{6 \quad 32}$

$2 \quad 29$

$t = 6^h\ 34^m\ 32^s$

W. obs.

Coarse Hour Circ = $2^h\ 3^s$
" Decl " = -16.1
Fine " " = ~~* + div.~~ ± 4 div ±
" Hour " = $14^h\ 34^m + 2.4$ div
Pos. Ang 260° – dist. 14^s Mags 9 + 9.3

B 82 ~~o + o~~ Star at $4^h\ 36^m + 0^s \quad +32.7$
~~Red star + 12 + 34.1~~

$\underline{4^h \quad 36} \qquad +32.7$

$2 \quad 4$

$6 \quad 47$

$\underline{4 \quad 3 \quad 6}$

7 1 1

Feb. 4, 1881.

9 50 β Urs. Min. 2 α Urs. Min. S. obs.
ε Urs. Maj. 1 α Urs. Min.
α Urs. Min. 2 γ Cass.

Color 1. Interrupted Spectrum probably type 3. S. Obs.

Color 2. Interrupted Spectrum prob. type 3. W. Obs.

Setting on α Aurigae
$t = 7^h\ 3^m\ 8.9^s$

W. obs

Coarse Hour Circ = $1^h\ 57.5^m$
" decl. " = $+46.05^\circ$
Fine " " = + 4.6 div
" Hour " = $13^h\ 58^m + 0.1$

$t = 7^h\ 18^m\ 54.5$
19 32.3
19 53.9
20 32.4

Feb. 5, 1881.

6 40 β Urs. Min. 1 α Urs. Min. S. Ar.
ε Urs. Maj. = α Urs. Min.
α Urs. Min. 3 γ Cass.

Birmingham 11 (?) S. Ar.
7 0 t $4^h\ 7^m$
h 3 13 δ 67°.2

This is the only reddish star found in the region. Color 1; spectrum faint, bands suspected; not apparently type IV, perhaps III.

α Cass. for circle corr.
t $4^h\ 12^m$
h 3 38 δ 56°.0
0 34

Circles & chron. about right. Hence Birmingham 11 is likely to be one of the stars preceding that above described; probably the southern of a pair of pretty bright stars. Its spectrum was not peculiar.

Red Star Birmingham 15.
1^h 0 +52 51
4 45
+3 45.

7 45 Color 2 - Spec. not peculiar. W. ob.

Feb. 5, 1881.

Red Star Birmingham #14

7 58 Color 1 Bands suspected. W. obs Mag. 9. This star precedes #15 by abt. 2 min. instead of 1m 43s as in Birmingham - but is a red star and in right relative dec. - prob. #14.

This star is ~~#~~ D. M. +52° # 252.

Red Star Birmingham # 33.

1h 54m +54.4°
5 11
+3 17

5 44
1 54
+3 50

8 11 Color 1 - Very fine bands especially ~~towards~~ in middle and more refrangible end of spectrum. - band also in yellowish green. W. obs.

Transits to identify star with Ring. Spec.
5h 35m 44.6s

21 51 37 5h 42m 37.6s = time of transit of star with Ring. Spec.

Feb. 5, 1881.

also red $5^h\ 46^m\ 8.8^s$ = time of transit of another red star

~~5 46 48.2 = time of transit of another red star~~

5 46 48.2 = time of transit of white star

Mags. of ~~both~~ fol. red star 8; Mag. of white Star = 8.2

α 1 51 37 Red Star with sing. spec. about 22' South of ~~white~~ following white star

2nd red star 7' north of following white star

$5^h\ 52^m\ 45.0^s$ = time of transit of sing. star

Singular star estimated 8.5 mag. ± — it being somewhat cloudy so that an accurate estimate was not easy

$5^h\ 55^m\ 9.8$ = time of trans. of 8.5 mag. Star

5 55 26.8 = " " " " 6.0 " "

~~Same again~~

Star with singular spec. 20' north of 6th Mag. star

α 1 51 37 $5^h\ 59^m\ 44.5^s$ = transit of star with sing. spec

6 2 28.0 = " " 6th Mag. Star

6 3 36.0 = " " 8½ " "

6 3 54.2 = " " 6th " "

The 8.5 Mag. star is 4.5' south of the 6th Mag.

~~Transit~~ Identification of 6th mag.

$t = 6^h\ 5^m\ 9.3^s$

Coarse Hour Circ = $4^h\ 11.5^m$

" decl " = 54.1

Feb. 5. 1881.

6 5
4 11
1 5 4

4) + 0.32.
8.

4) + 3.53.
90

2 44
1 52 41.6
1 49 57.6

+53° 27′

Star with singular spectrum seems to coincide with D.M. +54° # 431. = 9.0 mag.

Second red star follows B 33, 3ᵐ 31ˢ and is 29′ north

B 33 1ʰ 55ᵐ 6ˢ +54° 38′.8 = H.C
1 58 37 55° 8′ = H.C Spectrum not peculia

Bm. 33 is not the star with the singular spectrum, which is identified with DM. +54° 431; its place for 1880 is 1ʰ 51ᵐ 37ˢ, +54° 14′.4; the other red star seems to follow by 3ᵐ 31ˢ and to be 29′ north; hence its place for 1880 is 1ʰ 55ᵐ 8ˢ, + 54° 43′.4; this last star is most likely identical with Bm. 33, or Schj. 15. The place of Schj. 15 for 1880 is 1ʰ 55ᵐ 7ˢ, + 54° 39′.0; magn. 7.9. The Δδ estimated on p. 172 is probably too large.

Feb 6, 1881

Ob 81°30 Var. Cephei.
Compared with 7.5 P.obs.

6 30 β Urs. Min. 1 α Urs. Min. S.obs.
ε Urs. Maj. = α Urs. Min.
α Urs. Min. 3 γ Cass.

No correction in time

Vernier A 144°. P.obs.

7 7
~~7 44 31~~
~~11 31.~~
115.6
134.8 19.[illegible]$^{+\wedge}$

7 7.5
~~292~~
294.2
316.3 22.1$^{+\wedge}$

7 8
7 7 30.
4 44 31.
11 √2 1.
41.3$^{+\wedge}$ ~~3.7~~ 3.70$^{+\wedge}$
20.65

7 9 P.obs.
113.7
135.3 21.6$^{+\wedge}$

7 9.0
4 44 .31
11 √3 31.
294.6
316.6 22.0$^{+\wedge}$

7 9
43.6$^{+\wedge}$ 3.58$^{+\wedge}$
21.80

7 9 P.obs.
113.7
134.6 20.9$^{+\wedge}$

7 9.5
4 44 31
11 √4 1.
294.0
314.7 20.7$^{+\wedge}$

7 10
41.6$^{+\wedge}$ 3.68$^{+\wedge}$
20.80

Feb. 6. 1881.

7 14 ~~112.7~~ 22.7 S. obs.
~~135.4~~
7 14.5 c ~~264.5~~ Clock stopped
~~315.9~~

7 19 113.1 21.9 +^ S. obs.
135.0
7 19.5 c
4 44 31 292.8 22.4 +^
7 20 12 4 1. 315.2
44.3 +^ 3.5 ~~4~~ 5 + ^
22.15 c

7 21 112.0 22.0 +^ S. obs.
134.0
7 21.5 c
4 44 31. 291.8 21.9 +^
7 22 12 6 1. 313.7
43.9 +^ ~~3.58~~ 7 +
3.56 ^
21.95 c

7 23 113.0 20.5 +^ S. obs.
133.5
7 23.5 c
4 44 31. 292.8 21.5 +^
7 24 12 2 1. 314.3
42.0 +^ 3.66 +^
21.00 c 30°

In these sets points of cardboard were inserted to mark center of field.
Replaced at 7 40 by points of 60°
Replaced Mead also

Feb. 6. 1881

8 10 Looked at star with Say that disc. by W. Feb. 5. DM. 54° 431. 9.0 magn.

			Dec.		
5	30	9.5	7.7	red star 431	8.5
	31	13.	8.8		—
	31	31	5.8		
		40	1.6		
	32	59	0.5		~~7.8~~ 7.6
	33	26	8.5		9.3
	34	11.5	5.8		~~8.0~~ 7.8

Red Star DM 54° 431 at 8.5 magn.

44	55.8	7.5	49	59.7	7.0	5 4
46	48.5	5.0	51	50.5	4.6	2
47	0.5	8.2	52	2.6	7.8	2
	17.0	5.8	52	19.0	5.4	2
	26.0	1.6	52	27.2	1.5	1

DM +54° 431	Magn. S. obs.	8.8	red star	9.0 DM. magns.
435		9.5	next foll. s.	9.5
436		9.4	" " n	9.5
438		9.1	" " somewhat s.	9.0
439		9.3	" " far s	9.1

0 red star W. obs. magn.
+1.2
+1.0
+0.5
+0.8

Feb. 6, 1881

Spectrum of red star consists of bands and zones, with maxima immediately following bands (going from red to violet); normal third type

S. obs.

Transits of spectrum W. obs.

Points of spectrum observed are the red ends of ~~the~~ zones.

1st wire	37.4			1st wire 8.2			1st wire 23.2		Red end
	47.0	9.6	9.5	12.0	3.8	8.8	28.8	5.6	foremost
	53.8	6.8		17.7	5.7		32.0	3.2	
	58.9	5.1	7.6	25.3	7.6	7.8	34.6	2.6	
	6.3	7.4		31.1	5.8		39.8	5.2	
2d wire	30.2			36.2	5.1		45.0	5.2	
				2d wire 1.9			52.0	7.0	
							2d wire 16.0		

ρ Persei

	~~24.1~~							
	12.0			47.2			50.4	
1st wire	13.1 —			1st wire 50.0			1st wire 52.2	
6.9	15.2		6.0	51.2		6.8	53.2	
	20.0	4.8		56.0	4.8		0.0	
	24.8	4.8		0.5	4.5		3.3	
	28.2	3.4		4.3	3.8		7.4	
	33.0	4.8		8.4	4.1		12.0	
	37.0	4.0		13.2	4.8		16.0	
	40.5	3.5		17.2	4.0		20.1	
2d wire	53.2		2d wire	29.2		2d wire	32.3	

52.8 40.1 $\frac{40}{53} \times 5.8$ $53)\,232.0\,(4.4$ 212 220 $\frac{40}{53} \times 9.5$ $53)\,380.0\,(7.2$ 371 9.0

Feb. 6. 1881.

DM +81° 25 & +81° 26

9 39 119.7 P. Obs.
138.3 18.6$^{+\wedge}$
9 39.5<
4 44 31. 296.3
14 24 1.
40 320.7 24.4$^{+\wedge}$ / 43.0$^{+\wedge}$ 3.61$^{+\wedge}$
21.50<

40 116.2 P. Obs.
140.7 24.5$^{\wedge +}$
9 40.5<
4 44 31. 298.4
14 25 1.
41 318.7 20.3$^{+\wedge}$ / 44.8$^{\wedge +}$ 3.52$^{+\wedge}$
22.40<

P. obs.

9 ~~42~~ 42 118.1
137.0 18.9$^{+\wedge}$
9 42.5<
4 44 31. 296.4
14 27 1.
~~43~~ 43 319.7 23.3$^{+\wedge}$ / 42.2$^{+\wedge}$ 3.65$^{+\wedge}$
21.10<

9 ~~47~~ 47 118.0 W. obs
138.5 20.5$^{+\wedge}$
9 47.0<
4 44 31. 296.0
14 31 31.
~~49~~ 47 317.5 21.5$^{+\wedge}$ / 42.0$^{+\wedge}$ 3.66$^{+\wedge}$
21.00<

9 ~~49~~ 47 116.8 W. obs
139.4 22.6$^{+\wedge}$
9 48.0<
4 44 31. 294.7 23.4$^{+\wedge}$
14 32 31.
~~51~~ 49 318.1 46.0$^{+\wedge}$ 3.46$^{+\wedge}$
23.00<

Feb. 6. 1881

9 ~~51~~ 49 116.7 22.1 +^ Wch
138.8
9 50.0ᶜ
4 44 31. 294.8 24.2 +^
14 34 31.
~~52~~ 51 319.0
46.3 +^ ~~3.44~~ 5+
3.44 ^
23.15ᶜ

9 ~~52~~ 51 115.5 22.9 +^ S. obs
138.4
9 52.0
4 44 31. 297.5 22.5 +^
14 36 31.
~~55~~ 53 320.0
45.4 +^ 3.49 +^
22.70ᶜ

9 ~~55~~ 53 118.0 20.9 +^ S. obs.
138.9
9 54ᶜ
4 44 31. 297.1 21.1 +^
14 32 31.
~~57~~ 55 318.2
42.0 +^ 3.66 +^
21.00ᶜ

9 ~~57~~ 55 116.3 22.5 ^+ S. obs.
138.8
9 55.5ᶜ
4 44 31. 294.9 22.7 ^
14 40 1.
56 ~~58~~ 317.6
45.2 ^ 3.~~49~~ 50 +^
22.60ᶜ

Set in normal position. P. obs.

57 115.2 24.7 +^
139.9
9 58.0ᶜ
4 44 31. 296.9
59 14 42 31. 316.4 19.5 +^
44.2 +^ 3.55 +^ ✓
22.10ᶜ

Feb. 6, 1881.

Stars near preceding edge of field;
Distance equals 0.7 radius of field.

10 0 118.2 P. obs.
136.0 17.8
10 0.5
4 44 31. 298.8
~~3/.~~
1 14 45 1. 318.9 20.1 ~~3.81~~ 3.89 ✓
37.9
18.95

Stars near fol. edge of field –
dist. 0.7 radius.

10 3 114.0 P. obs.
142.1 28.1
10 3.5
4 44 31. 296.4
4 14 48 1. 316.2 19.8 ~~3.36~~ ~~3.7~~ ~~3.89~~ 3.37 ✓
47.9
23.95

Focus before at 440.8

Focus set at 420.8

5 118.2 P. obs.
137.3 19.1
10 5.5
4 44 31. 296.3
6 14 50 1. 318.3 22.0 ~~3.70~~ ~~3.76~~ 3.71 ✓
41.1
20.55

Images reversed – Reading of A about
150

Feb. 6. 1881.

P. obs.

10 09 28.3

49.3 21.0+^

10 9.5

4 44 31. 206.3

14 54 1.

10 226.2 19.9+^

40.9+^ 3.72+^ ✓

20.45

Feb. 7. 1881.

D.M. 81.25 Stars faint and bright enough to be measured at 6 05

6 16 168.4 reject P. obs.

6 17 143.4 P. obs.
~~6 17.5~~ 169.7 26.3+^
20
~~6 19.7~~ 326.4 21.2+^
6 18 347.6 47.5+^ 3.3~~9~~8^+
23.75^

6 17 30
+2 15
4 44 31
11 4 16.

6 19 147.1 20.5+^ P. obs.
~~6 19.5~~ 167.6
22
~~6 21.7~~ 323.7 24.5+^
6 20 348.2 45.0+^ 3.51+^
22.50<

6 19 30.
+2 15
* 4 44 31.
11 6 16.

6 20. 146.2 22.2+^ P. obs
6 20.5< 168.4
23
6 22.7< 325.0 21.3+^
6 21 346.3 43.5+^ 3.58+^
21.75<

6 20 30
+2 15.
/ 4 44 31.
11 7 16.

6 25 147.0 22.3+^ S. obs
169.3
28 6 26.5<
6 27.7< 323.2 30.0+^
26 353.2
52.3+^ 3.17+^
26.15<

6 25 30.
2 15.
4 44 31.
11 12 16. Edge of cirrus stream near them.

Feb. 7, 1881.

6 28 140.3 29.7 +^ S. obs.
170.0
31 ~~6 28.5~~
~~6 30.7~~ 327.3 20.7 +^
29 348.0
50.4 +^ 3.2~~8~~ 5 +^
25.20

6 28 30
2 15
4 44 31.
11 15 16.

6 30 146.0 20.0 +^ W. obs
~~6 31.0~~ 166.0
33
~~6 33.2~~ 320.4 28.5 +^
32 348.9
48.5 +^ 3.34 +^
24.25

6 31 0.
2 15.
2 4 44 31.
11 17 46.

6 33 144.3 23.2 +^ P. obs.
6 33.5 167.5
36
6 35.7 324.6 22.1 +^
34 346.7
45.3 +^ 3.~~49~~ 50 +^
22.65

6 33 30.
2 15.
4 44 31.
11 20 16.

6 35 145.0 P. obs.
21.2 +^
6 35.5 166.2
38
6 37.7 324.1 22.9 +^
36 347.0
44.1 +^ 3.5~~4~~ 6 +^
22.05

6 35 30.
2 15.
4 44 31.
11 22 16.

6 36 143.7 P. obs.
39 6 36.5 167.6 23.9 +^
6 38.7 323.4 22.9 +^
37 346.3
46.8 +^ 3.42 +^
23.40

6 36 30.
2 15.
4 44 31.
3 11 23 16.

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6 42 147.0 18.0+^ S. obs. No. 25 from 26

165.0 0°

46 6 44.0< 319.7

6 46.2< 349.0 29.3+^ 180°

46

47.3+^ 3.40+^

23.65<

6 44 0.

2 15.

4 44 31.

11 30 46.

6 48 141.3 27.8+^ S. obs. 180°

169.1 Eyes parallel to stars

53 6 50.5< 322.8 {before reversing images; reject.}

6 52.7< 324.2 0°

53 345.8 21.6+^

49.4+^ 3.30+^

24.70<

6 50 30.

2 15.

4 44 31.

11 37 16.

6 55 144.7 21.5+^ S. obs. 0°

57 6 56.5< 166.2 Eyes perpendicular to stars

58.7< 320.4 180°

58 349.0 28.6+^

50.1+^ 3.2~~7~~6+^

25.05<

6 56 30.

2 15.

4 4 44 31.

11 43 16.

7 1 142.6 26.7+^ S. obs. 180°

5 7 2.5< 169.3 Eyes perp.

4.7< 324.4

4 347.0 22.6+^ 0°

49.3+^ 3.3~~1~~0+^

24.65<

7 2 30.

2 15.

4 44 31.

11 49 16.

W. Obs.

4 142.7 24.6+^ Eyes par. 0°

7 7 5.0< 167.3

7.2< 320.3

6 345.5 25.2+^ 180°

49.8+^ 3.28+^

24.90<

7 5 0.

2 15.

4 44 31.

11 51 46.

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7 7 144.0 $23.9^{+\wedge}$ N. Obs. 180°

167.9 Eyes perp.

$\frac{10}{9}$ 7 8.0< 322.5

10.2< 347.2 $\frac{24.7^{+\wedge}}{48.6^{+\wedge}}$ 3.3~~4~~$^{3+\wedge}$ 0°

24.30<

7	8	0
	2	15
~~5~~4	44	31.
11	54	46.

Thin clouds in this region.

7 10 144.0 $21.8^{+\wedge}$ P. Obs.

10.5< 165.8

$\frac{13}{11}$ 7 12.7< 322.9

345.9 $\frac{23.0^{+\wedge}}{44.8^{+\wedge}}$ $3.52^{+\wedge}$

22.40<

7	10	30.
	2	15.
4	44	31.
11	57	16.

7 11 144.6 $21.6^{+\wedge}$ P. Obs.

12.0< 166.2

$\frac{14}{13}$ 7 14.2< 322.4

347.3 $\frac{24.9^{+\wedge}}{46.5^{+\wedge}}$ $3.44^{+\wedge}$

23.25<

7	12	30
	2	15.
4	44	31.
11	59	16.

7 13 144.7 $20.6^{+\wedge}$ P. Obs.

165.3

$\frac{16}{14}$ 7 13.5< 322.8

15.7< 347.3 $\frac{24.5^{+\wedge}}{45.1^{+\wedge}}$ 3.5~~1~~$^{0\wedge}$

22.55<

7	13	30.
	2	15.
~~5~~4	44	31.
12	0	16.

7 17 ~~144.0~~ 2 mondlinge W. Obs

7 14 R.112 ~~141~~

139.9 reject

February 7, 1881.

7 16 139.9 W. obs.

169.0 $29.1^{+\wedge}$

19 7 17.0<

19.2< 324.2

18 349.8 $\frac{25.6^{+\wedge}}{54.7^{+\wedge}}$ $3.07^{+\wedge}$

27.35<

7 17 0.

4 2 15.

4 44 31.

12 3 46.

7 19 143.7 W. obs.

163.1 $19.4^{+\wedge}$

22 7 19.5<

21.7< 320.2

20 348.5 $\frac{28.3^{+\wedge}}{47.7^{+1}}$ 3.38^{+1}

23.85<

7 19 30.

4 2 15.

44 31.

12 6 16.

7 20 142.2 W. obs.

167.1 $24.9^{+\wedge}$

23 7 21.0<

324.9

22 23.2< 345.2 $\frac{20.3^{+\wedge}}{45.2^{+1}}$ 3.50^{+1}

22.60<

7 7 21 0

4 2 15

44 31.

12 7 46.

7 22 143.9 P. obs.

165.1 $21.2^{+\wedge}$

25 7 22.5<

24.7 322.3

23 345.0 $\frac{22.7^{+\wedge}}{43.9^{+1}}$ ~~3.58~~ ~~7+~~ $3.56^{\wedge}$

21.95<

7 22 30.

4 2 15.

44 31.

12 9 16.

7 24 141.8 P. obs.

165.6 23.8^{+1}

27 7 24.5<

26.7< 322.5

25 345.8 $\frac{23.3^{+1}}{47.1^{+1}}$ 3.4~~1+~~ $0^{\wedge}$

23.55<

7 24 30.

4 2 15.

44 31.

12 11 16.

7 25 142.6 P. obs.

166.5 23.9^{+1}

28 7 25.5<

27.7< 321.4

26 345.7 $\frac{24.3^{+1}}{48.2^{+1}}$ 3.3~~6~~ 5^{+1}

24.10<

8 7 25 30.

4 2 15.

44 31.

12

February 7, 1881.

7 27 141.5 W. obs.
169.0 27.5+
30 7 28.0<
30.2< 322.8 26.4+
29 349.2 53.9+ ~~3.10~~ 7+ 3.10
26.95<
7 28 0
2 15
4 44 31.
12 14 46.

7 29 143.1 W. obs.
168.0 24.9+
32 7 30.0<
32.2< 321.0
29.0+
31 350.0 53.9+ ~~3.10~~ 7+
26.95< 3.10
7 30 30.
2 15.
4 44 31.
12 17 16.

7 31 140.2 W. obs.
168.4 28.2+
34 7 32.0< ~~5.6~~
34.2< 324.0 20.5+
33 344.5 48.7+ 3.3~~3~~2+
24.35<
9 7 32 0
2 15
4 44 31.
12 14 46.

7 33 142.9 P. obs
165.4 22.5+
36 7 33.5<
35.7< 322.2 23.9+
34 346.1 46.4+ 3.44+
23.20<
7 33 30.
2 15.
4 44 31.
12 20 16.

7 34 142.3 P. obs.
166.4 24.1+
37 7 35.0<
37.2< 321.2 25.5+
36 346.7 49.6+ 3.29+
24.80<
7 35 0
2 15.
4 44 31
12 21 46.

7 36 142.1 P. obs.
24.5+
36.5< 166.6
39 7
38.7< 321.8 25.2+
37 347.0 49.7+ 3.2~~9~~8+
24.85<
10 7 36 30.
2 15.
4 44 31

188

February 7, 1881.

7 39 140.8 W. obs.

169.8 29.0+^

42 7 39.5<

7 41.7< 323.4 22.6+^

40 346.0 51.6+^ 3.20+^

25.80<

7 39 30.

4 2 15.

44 31.

12 26 16.

7 40 141.2 W. obs.

166.7 25.5+^

43 7 41.0<

7 43.2< 319.8

42 347.8 28.0+^ 3.09 12+^

~~54.7~~

53.5+^

26.75<

7 41 0.

4 2 15.

44 31.

12 27 46.

7 42 141.1 26.1+^ W. obs.

7 43.0< 167.2

45 45.2< 322.1 24.1+^

44 346.2 50.2+^ 3.26+^

25.10<

7 43 0.

4 2 15.

44 31.

12 29 46.

7 142.0 P. obs.

166.1 24.1+^

48 7 45.5<

47.7 320.0 25.2+^

46 345.2 49.3+^ 3.3~~1~~+ 0^

24.65<

7 45 30.

4 2 15.

44 31.

12 32 16.

7 46 141.6 25.0+^ P. obs.

166.6

49 7 46.5<

48.7 322.0 23.3+^

47 345.3 48.3+^ 3.3~~5~~+ 4^

24.15<

7 46 30.

4 2 15.

44 31.

12 33 16.

7 48 141.5 P. obs.

24.4+^

7 48.5< 165.9

51 50.7 320.5 24.9+^ 3.3~~1~~+ 0^

49 345.4 49.3+^

24.65<

7 48 30.

4 2 15.

12 44 31.

February 7, 1881.

~~7 49 139.0~~
~~167.7 28.7~~ Reject ~~W. obs.~~ Clock stopped

7 51 139.7 W. obs.
167.2 27.5
54 7 51.5
53.7 321.0 25.2
52 346.2 52.7 3.16
26.35

7 52 30.
2 15:
4 44 31.
12 39 16.

7 53 141.1 W. obs.
164.3 23.2
56 7 53.5
55.7 319.3 28.8
54 348.1 52.0 3.18
26.00

7 53 30.
2 15:
4 44 31.
12 40 16.

7 54 140.2 W. obs.
7 55.0 165.4 25.2
57 57.2 320.9 23.6
56 344.5 48.8 ~~3.38~~ ~~27~~
24.40 3.32

7 55 0.
2 5:
4 44 31.
12/13 41 46.

7 56 Clouds getting thick.
~~59~~

7 57 140.0 P. obs.
166.3 26.3
8 0 7 57.5
59.7 321.5 24.3
58 345.8 50.6 3.24
25.30

7 57 30.
2 15:
4 44 31.
12 44 16.

7 58 139.2 P. obs.
164.7 25.5
8 1 7 58.5
8 0.7 320.1 25.5
59 345.6 51.0 3.23
25.50

7 58 30.
2 15:
4 44 31.
12

February 7. 1881.

~~7~~ 8 0 143.0 23.7 +^ P. obs.
166.7
3 8 0.5 < 320.0
2.7 < 345.3 ~~2~~5.3 +^
1 49.0 +^ 3.32 +^
24.50 <

8 0 30.
2 15.
4 44 31.
12 47 1416.

8 2 138.0 27.9 +^ W. obs
5 8 3.0 < 165.9
5.2 < 318.7 29.8 +^
4 348.5 57.7 +^ 2.9~~5~~4 +^
28.85 <

8 3 0.
2 15.
4 44 31.
12 49 46.

~~7~~ 8 4 139.7 25.2 +^ W. obs.
164.9
7 8 4.5 < 319.2 29.6 +^ Sky nearly clear.
6.7 < 348.8
5 54.8 +^ 3.07 +^
27.40 <

8 4 30.
2 15.
4 44 31.
12 5~~1~~ 16.

~~A~~ 8 5 137.5 28.7 +^ W. obs.
166.2
8 8 6.0 < 321.0 24.0 +^
8.2 < 345.0 52.7 +^ 3.16 +^
7 26.35 <

8 6 0.
15 2 15.
4 44 31.
12 52 46.

8 8 138.6 26.8 +^ P. obs
8 8.5 < 165.4
11 10.7 < 318.7 25.8 +^ 3.16 +^
9 344.5 52.6 +^
26.30 <

8 8 30.
2 15.
4 44 31.
12 55 16.

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8 9 140.6 — P. obs

163.8 23.2+^ Somewhat cloudy.

12⁸ 10.0< 12.2< 316.2 30.1+^

11 346.3 53.3+^ 3.1~~3~~ 2+^

26.65<

8	10	0.
	2	15.
4	44	31.
12	56	46.

8 11 138.4 — P. obs.

~~318.4~~ 30.3^

168.7

14⁸ 12.0< 14.2< 318.8 26.5^

13 345.3 56.8~~7~~^ 2.9~~7~~ 8+^

28.40<

16

8	12	0.
	2	15.
4	44	31.
12	58	46.

8 14 138.5 — W. obs

167.2 28.7+^

17⁸ 15.0< 17.2< 320.4 25.4+^ 3.10+^

16 345.8 54.1+^

27.05<

8	15	0.
	2	15.
4	44	31.
13	1	46.

8 16 137.0 — W. obs.

163.2 26.2+^

19⁸ 16.5< 18.7< 317.2 30.1+^

17 347.3 56.3+^ 3.0~~7~~ 0+^

28.15<

8	16	30.
	2	15.
4	44	31.
13	3	16.

8 18 138.2 — W. obs.

168.7 30.5+^ Clouds thin.

21⁸ 18.5< 20.7< 319.0 26.2+^

19 345.2 56.7+^ 2.9~~9~~ 8^+

28.35<

17

8	18	30.
	2	15.
4	44	31.
13	5	16.

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Pos. of 25 from 26 20°. Eyes perpendicular to stars. S. obs

8 22 140.0 S. obs.

23.7 +^

163.7

25 8 23.0<

25.2< 313.1

40.1 +^

24 353.2 63.8 +^ 2.72 +^

31.90<

8 23 0.

2 15.

4 44 31.

13 9 46.

8 25 135.5 S. obs.

33.5 +^

169.0

28 8 25.5<

27.7< 317.8 30.0 +^

26 347.8 63.5 +^ 2.73 +^

31.75<

8 25 30.

2 15.

4 44 31.

13 12 16.

8 27 Clouds thin

27 139.2 S. obs.

25.9 +^

165.1

30 8 27.5<

29.7< 316.2 31.8 +^

28 348.0 57.7 +^ 2.9~~5~~4 +^

28.85<

8 27 30.

2 15.

18 4 44 31.

13 14 16.

8 30 138.0 P. obs.

29.3 +^

167.3.

33 8 31.0<

33.2< 315.2 32.6 +^

32 347.8 61.9 +^ 2.7~~9~~8 +^

30.95<

8 31 0.

2 15.

4 44 31.

13 17 46.

8 32 136.4 P. obs.

29.7 +^

166.1

35 8 32.5<

34.7< 316.8 29.8 +^

33 346.6 59.5 +^ 2.8~~7~~8 +^

29.75<

8 32 30.

2 15.

4 44 31.

13 19 16.

clouds thin.

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8 34 137.6 26.1+^ P. obs.
163.7
37 8 34.5 36.7 316.1 29.9+^
35 346.0 56.0+^ 28.00 3.02+^

8 34 30.
2 15.
19 4 44 31.
13 21 16.

8 35 137.2 26.6+^ W. obs.
8 38.5 163.8
38 37.7 313.8 32.4+^
36 346.2 59.0+^ 29.50 2.90+^

8 35 30.
2 15.
4 44 31.
13 22 16.

8 37 136.0 30.0+^ W. obs
166.0
40 8 37.5 39.7 315.7 Clouds thin.
38 345.2 29.5+^ 59.5+^ 29.75 2.88+^

8 37 30.
2 15.
4 44 31.
13 24 16.

8 38 134.2 28.9+^ W. obs.
163.1
41 8 38.5 40.7 313.1 34.1+^
39 347.2 63.0+^ 31.50 2.75+^

8 38 30.
2 15.
4 44 31.
20 13 25 16.

Pos. of 25 from 26 200° Eyes perpendicular to stars. S. obs.

8 40 133.7 34.7+^ S. obs.
8 41.0 168.4
43 43.2 315.7 30.1+^
42 345.8 64.8+^ 32.40 2.68+^

8 41 0
2 15
4 44 31.
13 27 46.

February 7, 1881.

8 42 137.0 S. obs.
164.0 27.0+^
45^8 43.0< 45.2< 313.2 Clouds rather thin.
44 351.3 38.1+^
65.1+^ 2.68+^
32.55<
8 43 0.
2 15.
4 44 31.
13 29 46.

8 44 130.2 S. obs.
168.9 38.7+^
47^8 45.0< 47.2< 315.8 32.2+^
46 348.0
70.9+^ 2.48+^
35.45<
21
8 45 0.
2 15.
4 44 31.
13 31 46.

8 46 134.0 W. obs
32.0+^
46.5< 166.0
49^8 48.7< 313.3 37.7+^
47 351.0
69.7+^ 2.52+^
34.85<
8 46 30.
2 15.
4 44 31.
13 33 16.

8 48 131.6 W. obs
36.3+^
48.5< 167.9 Clouds rather thin
51^8 50.7< 317.1 29.2+^
49 346.3
65.5+^ 2.66+^
32.75<
8 48 30.
2 15.
4 44 31.
13 35 16.

8 49 135.0 W. obs.
30.2+^
165.2
52^8 49.5< 51.7< 312.3 36.2+^
50 348.5
66.4+^ 2.63+^
33.20<
22
8 49 30.
2 15.
4 44 31.
13 36 16.

8 51 133.4 P. obs
32.5+^
51.5< 165.9
54^8 53.7< 313.3 37.1+^
52 350.4
69.6+^ 2.52+^
34.80< Clouds thinner.
8 51 30
2 15
4 44 31
13

February 7, 1881.

8	53		135.6			P. ob.
			165.8	30.2^{+}		
	56	8 5 3.5 < 55.7	312.6	33.7^{+}		
	54		346.3	63.9^{+}	2.72^{+}	
8	53	30.		31.95 <		
	2	15.				
4	44	31.				
13	40	16.				
8	55		133.6			P. ob.
				32.1^{+}		
		8 5 5.5 <	165.7			
	54	57.7	313.7		2.56	
	56		349.9	36.2^{+}	~~2.55~~	
8	55	30.		68.3^{+}		
	2	15.				
4	44	31.		34.15 <		
2 3 13	42	16.				

Pos. of 25 from 26 is 30° Eyes horizontal. S. ob

8	57		133.8			S. ob.
		8 57.5 <	170.7	36.9^{+}		
9	0	59.7 <	311.9	38.7^{+}		
	58		350.6	75.6^{+}	~~2.83~~ 2.33^{+}	
8	57	30.		37.80 <		
	2	15.				
4	44	31.				
13	44	16.				
8	59		132.3			S. ob.
				33.9^{+}		
		8 59.5 <	166.2			
9	2	9 1.7 <	313.8	Clouds thin		
9	00		343.0	29.2^{+}	5^{+}	
8	59	30.		63.1^{+}	~~2.74~~	
	2	15.				
4	44	31.		31.55 <	2.74	
13	46	16.				
9	01		135.4	30.7^{+}		S. ob
			166.1			
	4	9 1.5 < 3.7 <	311.0	39.3^{+}		
	02		350.3	70.0^{+}	2.51^{+}	
9	1	30		35.00 <		
	2	15				
24 4	44	31				
13	46	16.				

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9 3 126.9 45.8^{+1} H. obs

3.5< 172.7

6 9 5.7< 30~~0~~5.1 39.4^{+1}

4 344.5 85.2^{+1} 2.05^{+1}

42.60<

9/4/13 3/2/44/50 30./15./31./16.

9 4 123.1 43.5^{+1} W. obs

166.6

7 9 4.5< 6.7< 307.2 Clouds thin.

5 351.5 44.3^{+1}

87.~~7~~8 1.9~~8~~7^{+1}

43.90<

9/4/13 4/2/44/51 30./15./31./16.

9 6 130.5 43.1^{+1} W. obs.

9 9 6.5< 173.6

8.7< 313.8 32.2^{+1}

7 346.0 75.3^{+1} 2.34^{+1}

37.65<

25 9/4/13 6/2/44/53 30./15./31./16.

9 7 130.8 35.8^{+1} P. obs

166.6

10 9 8.0< 10.2< 310.3 38.1^{+1} 2.38^{+1}

9 348.4 73.9^{+1}

36.95<

9/4/13 8/2/40/54 0/15/31/46.

9 9 130.6 37.6^{+1} P. obs

168.2

12 9 9.5< 11.7< 308.5 Clouds rather thin.

10 348.4 39.9^{+1}

77.5^{+1} 38.75< 2.27^{+1}

9/4/13 9/2/44/56 30./15./31./16.

9 11 128.7 38.9^{+1} P. obs.

167.6

14 9 11.5< 13.7< 311.0 37.2^{+1}

12 348.2 76.1^{+1} 2.3~~1~~2^{+1}

38.05<

26 9/4/13 11/2/40 30./15./3 16

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Pos. of 25 from 26 ~~24~~ 210° Eyes horizontal S. obs

9 13 126.9 S. obs
168.3 41.4+1

16 9 14.0<
16.2< 309.0 38.2+1
15 347.2 79.6+1 2.21+1
39.80<

9 14 0.
2 15.
4 44 31.
14 0 46.

9 15 128.4 S. obs
169.2 40.8+1 Clouds thicker.

18 9 16.0<
18.2< 307.5 38.6+1
17 346.1 79.4+1 2.21+1
39.70<

9 16 0.
2 15.
4 44 31.
14 2 46.

9 17 128.6 S. obs.
168.7 40.1+1

20 9 17.5<
19.7< 308.2 39.6+1 2,20
9 18 347.8 79.7+1 ~~2.20~~ 4+
39.85<

9 17 30.
2 15.
27 4 44 31.
14 4 16.

9 20 127.2 W. obs
165.5 38.3+1

23 9 21.0<
23.2< 305.8 44.7+1
22 350.5 83.0+1 2.11+1
41.50<

9 21 0
2 15.
4 44 31.
14 7 46.

9 22 123.8 W. obs
167.2 43.4+1

25 9 22.5<
24.7< 308.5 37.7+1 Clouds thin.
23 346.2 81.1+1 ~~2.16~~ ~~7+~~
40.55< 2,16

9 22 30.
2 15.
4 44 31.
14 9 16.

9 24 128.0 W. obs.
167.0 39.0+1

26 9 24.0<
~~24~~ 26.2< 304.7 44.3+1
24 349.0 83.3+1 2.10+1
41.65<

28 9 24 0
2 15
4 44 31
14 10 46

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Index moved.

9 27 197.4 P. obs.
240.4 43.0+^
30 9 28.0<
30.2< 14.3
29 62.5 48.2+^
91.2+^ 1.88+^
45.60<
9 28 0
2 5
4 44 31.
14 14 46.

9 29 15.0 P. obs.
62.0 47.0+^ Clouds thin.
32 9 29.5<
31.7< 198.1 44.5+^
30 242.6 91.5+^ 1.87 8+^
45.75<
9 29 30.
2 15
4 46 31.
14 16 16.

9 31 16.0 P. obs.
59.3 43.3+^
34 9 31.5<
33.7< 194.7 47.9+^
32 242.6 91.2+^ 1.88+^
45.60<
9 31 30.
2 15.
29 4 44 31.
14 12 16.

Pos of 25 from 26 30° Eyes horizontal. S obs.

9 33 12.2 S. obs
63.8 51.6+^
36 9 33.5<
35.7< 194.0 48.4+^
34 242.4 100.0+^ 1.66+^
50.00<
9 33 30
2 15.
4 40 31.
14 20 16.

9 34 13.0 S. obs.
64.3 51.3+^
37 9 35.0<
37.2< 194.3 48.9+^
36 243.2 100.2+^ 1.65+^ Clouds thin.
50.10<
9 35 0
2 5
4 44 31.
14 21 46.

9 36 14.3 S. obs.
36.5< 60.8 46.5+^
39 9
38.7< 195.1 47.9+^
37 243.0 94.4+^ 1.80+^
9 36 30
30 4 2

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9 38 9.6 55.9 W. obs

65.5

41 9 39.0 193.5 45.3

9 41.2 238.8 101.2 1.63

40 50.60

9 39 0
4 2 44 15 31.
54 25 40 46.

9 40 15.1 W. obs.

63.5 48.4 Clouds thin

43 9 40.5 191.0

42.7 55.1

41 246.1 103.5 1.57

51.75

9 40 30.
4 2 44 15. 31.
14 27 16.

9 41 10.8 W. obs.

53.4

64.2

44 9 41.5 193.5 49.3

43.7

42 242.8 102.7 1.59

51.35

9 41 30.
31 4 2 44 15 31.
14 28 16.

9 43 8.8 P. obs.

55.8

64.6

46 9 44.0 193.7

46.2 45.1

45 238.8 100.9 1.6~~3~~4

50.45

9 44 0
4 2 44 15 31.
14 30 46.

9 45 11.9 P. obs.

64.3 52.4

48 9 45.5 189.6 Sky moderately clear.

47.7 55.2

46 244.8 107.6 1.47

53.80

9 45 30.
4 2 44 15. 31.
14 32 16.

9 46 7.8 P. obs.

63.4 55.6

49 9 47.0 191.3 48.1

44.2

48 279.4 103.7 1.5~~7~~6

51.85

9 47 0
32 4 2 44 15 31

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Pos of 25 from 26 220° Eyes horizontal. S obs

9 49 7.3 S. obs.

67.2 59.9$^{+\wedge}$

52 9 50.0 <

9 52.2 < 198.3 43.9$^{+\wedge}$ Perhaps 3d reading 188.3

51 242.2 103.8$^{+\wedge}$ 1.56$^{+\wedge}$

51.90 <

9	50	0
4	2 44	15 31.
14	36	46.

9 51 8.0 S. obs.

63.3 55.3$^{+\wedge}$

55 9 52.5 <

54.7 < 185.1 57.5$^{+\wedge}$ Clouds thin.

54 242.6 112.8$^{+\wedge}$ 1.35$^{+\wedge}$

56.40 <

9	52	30.
4	2 44	15. 31.
14	39	16.

9 54 4.3 S. obs.

64.2 59.9$^{+\wedge}$

57 9 54.5 <

56.7 < 186.2 57.9$^{+\wedge}$

55 244.1 117.8$^{+\wedge}$ 1.24$^{+\wedge}$

58.90 <

9	54	30.
33 4	2 44	15. 31.
14	41	16.

9 56 6.0 W. obs.

65.7 59.7$^{+\wedge}$

59 9 57.0 <

59.2 < 181.2 64.5$^{+\wedge}$

58 245.7 124.2$^{\wedge}$ Clouds Thin

62.10 < 1.3~~2~~ 10$^{+\wedge}$

9	52	0
4	40	15 31.
14	43	46.

9 58 3.9 W. obs.

64.6 60.7$^{+\wedge}$

10 1 9 58.5 <

10 0.7 < 188.3 52.6$^{+\wedge}$ 1.34$^{+\wedge}$

59 240.9 113.3$^{+\wedge}$

56.65 <

9	54	30.
4	2 44	15. 31.
14	45	16.

10 0 2.5 W. obs.

70.8 68.3$^{+\wedge}$ Clouds very thin

3 10 0.5 <

2.7 < 184.1 58.9$^{+\wedge}$

1 243.0 127.2$^{+\wedge}$ 1.04$^{+\wedge}$

63.60 <

10	0	30.
34 4	2 40	15. 31.
14		

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10 2 6.3 P. obs.
63.7 57.4 +^
5 (10 2.5<) 4.7< 184.6
3 243.9 59.3 +^
116.7 +^ 1.2~~7~~+ 6^
58.35<
10 2 30.
4 ²44 15. 31.
14 49 16.

10 3 2.6 P. obs.
65.8 +^
68.4
6 (10 3.5<) 5.7< 188.0 Clouds rather thin.
4 242.0 54.0 +^
119.8 +^ 1.20 +^
59.90<
10 3₂ 30.
4 44 15. 31.
14 50 16.

10 4 5.4 P. obs.
56.9 +^
(10 5.0<) 62.3
7 7.2< 183.6
60.9 +^
6 244.5 117.8 +^ 1.24 +^
58.90<
10 5 0
35 4 ₂44 15 31
14 51 46

Pos 25 from 26 40° Eyes Horizontal. S obs.

10 7 359.0 S. obs.
65.7 +^
(10 7.5<) 64.7
10 9.7< 181.0 64.2 +^
8 245.2 129.9 +^ .98 +^
64.95<
10 7₂ 30
4 44 15 31.
14 54 16.

10 9 1.2 S. obs.
(10 9.5<) 65.3 64.1 +^ Clouds thin
12 11.7< 183.0 59.0 +^ 1.12^
10 242.0 123.1 +^ .~~98~~ ~~1.12~~ 3+
61.55<
10 9₂ 30
4 44 15 31
14 56 16.

10 11 2.1 59.9 +^ S. obs.
62.0
14 (10) 11.5< 180.0 61.5 +^
12 13.7< 241.5 121.4 +^ 1.16 +^
10 11₂ 30
36 4 44 15 31
14 58 16. 60.70<

February 7, 1881.

10 . 13 1.1 W. obs.

69.0 67.9+^

10 13.5<

16 15.7< 178.9 61.1+^

~~61.2~~

14 240.9 129.0+^ 1.00+^

64.50<

10 13 30.

4 2 15.

44 31.

15 0 16.

10 14 3.1 W. obs.

64.1 61.0+^

10 15.0<

17 17.2< 181.2 61.7+^

16 242.9 122.7+^ Nearly Clear.

61.35<

10 15 0

4 2 15

44 31.

15 1 46. 1.14+^

10 16 359.5 W. obs

61.0+^

10 16.5< 60.5

19 18.7< 185.1 53.9+^

17 239.0 114.9+^ 0^ 1.3X+

57.45<

10 16 30.

37 4 2 15.

44 31.

15 3 16.

10 19 2.6 P. obs

65.1+^

10 19.5< 67.7

22 21.7< 181.3 58.2+^

20 239.5 123.3+^ 1.12+^

61.65<

10 19 30

4 2 15

44 31.

15 20 6 16.

2.3 P. obs.

56.0+^

10 20.5< 58.3 Nearly clear

23 22.7< 178.9 62.3+^

21 241.2 118.3+^ 1.23+^

59.15<

10 20 30.

4 2 15

44 31.

15 7 16.

10 22 359.1 62.2+^ P. obs.

10 22.5< 61.3

25 24.7< 181.4 57.9+^ 1.19+^

23 239.3 120.1+^

60.05<

10 22 30

38 4 42 15

44 35

15

February 7, 1881.

P 25 from 26 2250 Eyes Horizontal.

10 24 358.8 S. obs.
10 24.5 57.0 58.2
27 10 26.7 181.0
25 236.4 55.4
113.6 1.34
10 24 30
2 15
K KK 31.
15 11 16.
56.80

10 26 359.8 S. obs.
10 27.0 58.8 59.0
29 29.2 178.9 Nearly Clear.
28 225.8 46.9
105.9 Images much blurred
10 27 0
2 15
K KK 31.
15 13 K6.
52.95 ~~1.5~~ 2

10 28 355.0 S. obs
10 29.0 59.4 64.4
31 31.2 176.3 63.7
30 240.0 128.1 1.02
10 29 0
2 15
39 K KK 31
15 15 46
64.05

10 31 10 31.5 356.0 70.2 W. obs.
33.7 66.2
34 177.0 61.1
32 238.1 131.3 .95
10 31 30
2 15
K KK 31.
15 12 16.
65.65

10 32 355.2 W. obs.
66.9
10 32.5 62.1
35 34.7 177.2 65.3 Clouds thin
33 242.5 132.2 .93
10 32 30
2 15
K KK 31.
15 19 16.
66.10

33 353.9 W. obs
64.2
10 33.5 58.1
36 35.7 173.2 Stopped by clouds
34 244.0 70.8
135.0 .88
10 33 30.
2 15
40 K KK 31 15 20 16
67.50

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R. 112.			Bond 394.		
10	44	29.5	10	47	0.0
	45	29.5		48	0.0
	46	29.5		49	0.0
	47	29.5	10	50	0.0

10 46 44.5 "
44 29.5 "
$2^m\ 15^s.0$ "

∴ R 112. was $2^m\ 15^s.0$ slow.

Feb 11. 1881.

Adjusted Phot. S and attempted to make measures of S Cancri then near its minimum. Clouds interrupted the work and rendered the stars invisible before any measures were obtained.

1880phae.proj.131lW